FEB 1 1 1928

PAPER TRADE JOURNAL

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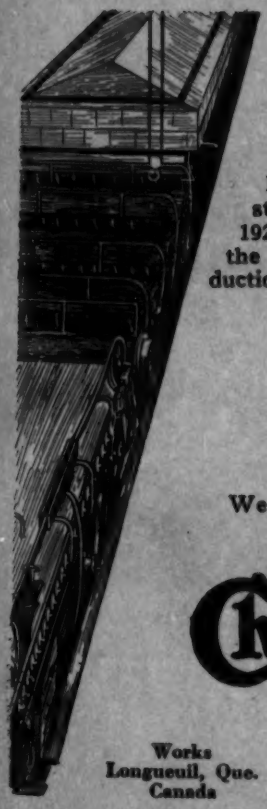
As Evidence — The Record of Our Machines



Extract from a letter of

The Brompton Pulp & Paper Co. Limited dated October 12th, 1927.

"The Machine was purchased from Charles Walmsley & Company, on March 26th, 1926—and the construction of the buildings was commenced on May 1st, 1926. The first merchantable Newsprint was shipped from the Mill on January 28th, 1927—and the average daily production for the past eight months is as follows:—

February	53.6	Tons
March	87.	"
April	97.4	"
May	99.	"
June	101.7	"
July	104.6	"
August	107.8	"
September	106.4	"
and October up to date	108.6	"

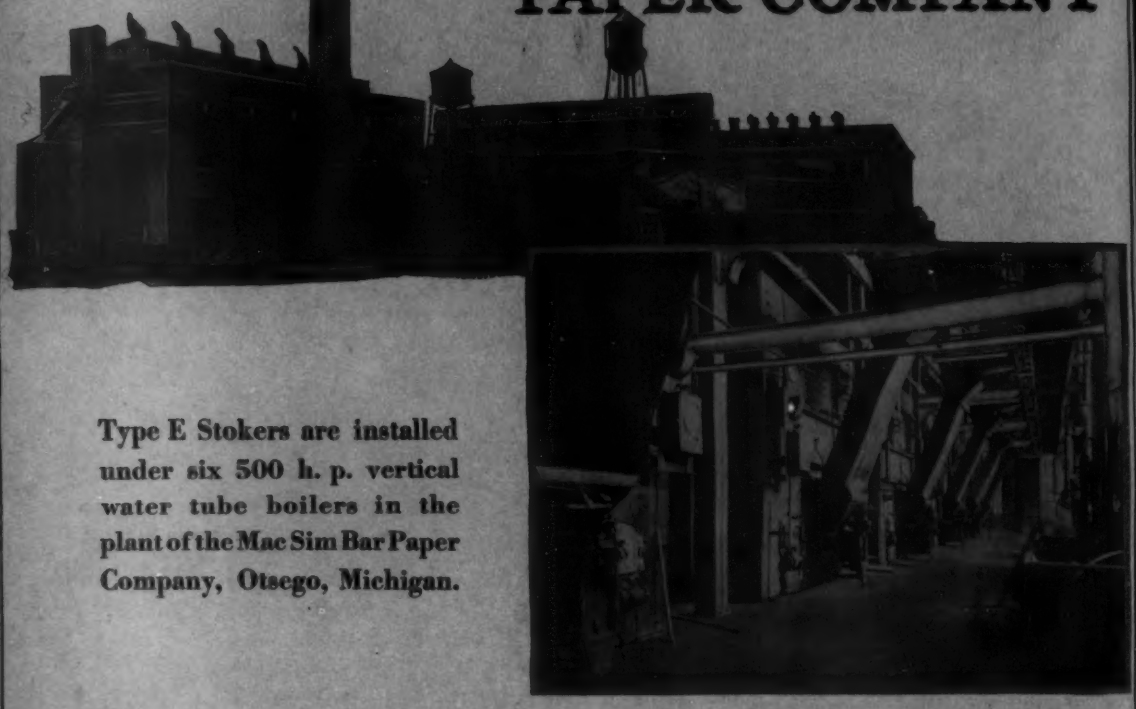
We would point out that this Machine is operated entirely on 32 lb. Standard Newsprint."

Charles Walmsley & Co. (CANADA) LIMITED

Works Longueuil, Que. Canada

Office Montreal, Que. Canada

TYPE E STOKERS
At MAC SIM BAR PAPER COMPANY



Type E Stokers are installed under six 500 h. p. vertical water tube boilers in the plant of the Mac Sim Bar Paper Company, Otsego, Michigan.

The satisfactory performance of the Type E Stokers is evidenced by the quotation from a recent letter received by us.

"These stokers are installed under six 500 h. p. vertical water tube boilers and have given excellent satisfaction. The new Power Plant, of which these stokers are an important part, has cut our labor costs and fuel costs very considerably over the old plant which was replaced."

Over 150,000 rated boiler horse-power of Type E Stokers have been installed in Paper and Pulp plants in the United States and Canada.

The extensive use of this stoker is due to its combining, to an unusual degree, the following advantages:

Absolute reliability.

Flexibility in meeting load conditions.

High fuel burning efficiency.

Combustion Engineering Corporation

International Combustion Building 200 Madison Ave., New York

A SUBSIDIARY OF INTERNATIONAL COMBUSTION ENGINEERING CORPORATION

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For the Coloring of Boxboard

WHERE reasonably good fastness to light and good fastness to alkali are essential, combinations of National Metanil Yellow P Conc., National Buffalo Black NBRP and National Acid Orange YP are used to advantage.

Under certain mill conditions, National Erie Yellow S2GP Conc. or National Erie Yellow SGP may be preferable to National Metanil Yellow P Conc.

The National Laboratories and Technical Staff are at your service. It will pay you to consult them about your color problems.

National Aniline & Chemical Co., Inc.
40 Rector St., New York, N. Y.

BOSTON CHICAGO PHILADELPHIA
PROVIDENCE CHARLOTTE SAN FRANCISCO
MONTREAL TORONTO

NATIONAL DYES

NATIONAL DYES

PAPER TRADE JOURNAL

ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

FIFTY-SIXTH YEAR

Published Every Thursday by the

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GEO. S. MACDONALD, President — F. K. HOPPIE, Secretary

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A clean cut with the DOWD "SPECIAL-A"

The Dowd "Special A" is giving complete satisfaction in hundreds of paper mills where 100 per cent accuracy is desired in paper knives.

Then, too, this knife (due to its scientifically correct heat treatment and temper) holds its edge and requires less re-grinding. Therefore, in addition to great accuracy, the "Special A" gives maximum service.

Try America's leading paper cutting knife for 10 days. If it does not satisfy you in every way, return it at Dowd's expense.

DOWD KNIVES — YOU be the judge — BELOIT, WIS. U.S.A.

R. J. Dowd Knife Works

Makers of Better Cutting Knives Since 1847

Beloit, Wisconsin

ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

Vol. LXXXVI, No. 6 PAPER Thursday, February 9, 1928

Awards on Paper for the Government Printer

Joint Congressional Committee Announces Successful Bidders for Furnishing Paper to the Public Printer for the Term of One Year Beginning March 1—Irregularity in Making Bids Causes Many Proposals to be Rejected—Total Expenditure for Paper and Envelopes Will Amount to Approximately $3,200,000

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., Feb. 6, 1928.—The awards for paper and envelopes for the Public Printing and Binding for the ensuing year, March 1, 1928 were made today. Another bid was added to those already recorded, namely that of the Cauthorne Paper Company, Richmond, Va., making a total of 40 bids on the paper items. A letter from the Senate Postmaster shows that this bid was received at the post office on January 29, at 7 o'clock, an effort was made to deliver it at the office of the Joint Committee that evening, but the office was closed, with the result that it was returned to the Office of the Postmaster and was there mislaid.

The committee, the Public Printer, and everybody intimately connected with this matter of supplying the Government are again disturbed over a condition which has arisen every year since the writer has been covering these bids and awards, namely the disregard of the instructions which are so carefully outlined in the proposals and not only outlined but doubly emphasized therein as to the necessary safe-guarding thereof and the Government requirements. For example, the proposals indicate very clearly in certain items that bids will only be considered on carload quantities, yet year after year bidders will persist in bidding on less-than-carload quantities and making special stipulations which, from their very nature, cause the bids to be rejected.

The committee is particularly pleased that there were not only more bidders this year than for a number of years last past but also that there were more bids on the various items. The total expenditures for envelopes will appropriate $72,000, and for both paper and envelopes, $3,200,000. This will result in a saving of $176,000 over the awards for last year's, of which $3,000 will be in connection with the envelope bids and the remainder on the paper bids.

The following resolutions were adopted by the Committee:

TERMS OF CONTRACTS

RESOLVED, That all contracts under the awards made by the Committee on the proposals opened January 30, 1928, shall be noted on the schedule of proposals for paper and envelopes and in such quantities as specified in said schedule.

CONTRACTS FOR PAPER AND ENVELOPES

RESOLVED, That the Public Printer be, and is hereby, authorized and directed to enter into the usual contracts with the successful bidders submitting proposals for paper and envelopes opened on January 30, 1928, in accordance with the terms of their proposals and the awards of the committee, and to submit such contracts and accompanying bonds to the committee for its further consideration and approval.

APPROVAL OF CONTRACTS

RESOLVED, That the chairman of the Joint Committee on Printing be, and is hereby, authorized and empowered to approve contracts for furnishing paper and envelopes for the public printing and binding for the term of one year, beginning March 1, 1928, made in accordance with the awards agreed upon by said committee on February 6, 1928, and to approve all bonds covering such contracts.

OPEN MARKET PURCHASE

RESOLVED, That, unless otherwise ordered by the committee, the Public Printer be, and is hereby, authorized and directed to purchase in the open market, in accordance with law, such paper and envelopes as may be needed from time to time for which contracts were not awarded on February 6, 1928.

Among the violations of provisions this year were: Bond not signed by principal; corporation seal omitted from bidder's signature; bond not signed by principal; bond not dated; certificate of trade standing not signed; and the peculiar thing is that most of these failures are on the part of experienced bidders. In the envelope bids one firm failed to file a certificate of approval and another omitted the corporation seal from the bidder's signature.

The awards are as follows:

PRINTING PAPER

No. 1—2,500,00 pounds Standard News Print Paper, basis 24x36 inches, 64 pounds. Rolls, 24, 36 and 48 inches (3-inch fiber cores with metal ends: Rejected.

MACHINE-FINISH BOOK

No. 3—500,000 pounds Machine-Finish Book, basis 25x38 inches, 70 pounds, Flat, cut 24x32, 28x38, and 31¼x45½ inches: P. H. Glatfelter Company, Spring Grove, Pa.; 5.49 cents.

No. 4—1,000,000 pounds, Flat, cut 24x38 inches, and 38x40 inches: P. H. Glatfelter Company, 5.38 cents.

No. 5—1,000,000 pounds, Flat, cut 24x38 and 38x48 inches: P. H. Glatfelter Company, 5.44 cents.

No. 6—2,500,000 pounds, Rolls 18, 19, 20, 21, 23 and 24 inches (3-inch cores): P. H. Glatfelter Company, 5.24 cents.

No. 7—1,300,000 pounds, Rolls, 38 inches wide, (3-inch iron cores): International Paper Company, New York City; 5.26 cents.

No. 8—1,300,000 pounds, Rolls 36 and 38 inches, (3-inch iron cores): International Paper Company; 5.26 cents.

No. 9—800,000 pounds, Rolls 48 inches, 3-inch iron cores): International Paper Company; 5.26 cents.

No. 10—400,000 pounds Ditto, 80-lbs, Rolls, 21, 32 and 38 inches wide (3-inch iron cores): Reese & Reese, Baltimore, Md.; 5.02 cents.

No. 11—1,000,000 pounds, Flat, cut 24x38, 33¾x64, and 38x48 inches: Reese & Reese, 5.22 cents.

No. 12—500,000 pounds, 100 pound, Flat, cut 22¼x32¼, 24x38, 24¼x36¼, 32x42, 38x48, and 41x52 inches: Reese & Reese; 5.12 cents.

No. 13—15,000 pounds, 120 and 140 pounds. Flat, cut 29x41 and 38x48 inches. Minimum Order 7,000 pounds: P. H. Glatfelter Company; 5.49 cents.

No. 14—50,000 pounds Colored, Blue and Salmon; bases 25x38 inches, 70 and 100 pounds. Flat, cut 25x38 and 38x48 inches. Minimum Order one color, 5,000 pounds: American Writing Paper Company, (Inc.) Holyoke, Mass.: 7.97 cents.

Machine-Finish Book End Paper

No. 17—80,000 pounds Machine-finish Book End Paper for Waste Leaves. Flat, 25x38 inches, 160 pounds; the grain to run the 38 inch way: Ross P. Andrews, Receiver for R. P. Andrews Paper Company, Washington, D. C.; 5.94 cents.

Antique Book

No. 18—75,000 pounds; basis, 25x38 inches, 100 pounds. Flat, cut 25x38, 38x50, and 45x51 inches: P. H. Glatfelter Company; 5.29 cents.

Light Weight Machine Finish Book

No. 19—50,000 pounds Light Weight Machine-Finish Book Paper, basis, 25x38 inches, 60 pounds. Flat, cut 32x48 and 38x48 inches: P. H. Glatfelter Company; 6.99 cents.

50 Per Cent Rag Light Weight High Machine-Finish Book

No. 20—100,000 pounds 50 per cent Rag Light Weight Machine Finish Book paper; basis, 25x38 inches, 60 pounds. Flat, cut 32x48 and 38x48 inches. Whitaker Paper Company, Baltimore, Md.; 9.92 cents.

No. 21—80,000 pounds 50 per cent Machine-finish Book Paper, basis, 25x38 inches, 80 pounds. Flat, cut 32x48 inches: Ross P. Andrews, Receiver, 8.99 cents.

No. 22—350,000 pounds 50 per cent, Flat, cut 38x48 inches: Ross P. Andrews, Receiver; 8.99 cents.

No. 23—100,000 pounds, 80 and 90 pounds. Flat, cut any size, minimum width 24 inches, maximum width 42 inches: Ross P. Andrews, Receiver; 8.99 cents.

Supercalendered Book

No. 25—70,000 pounds Supercalendered Book paper; basis, 25x38 inches, 90 pounds. Flat, cut 32x48 inches. Minimum order 15,000 pounds: P. H. Glatfelter Company; 5.49 cents.

No. 26—550,000 pounds, Flat, cut 31¼x45½ inches: Reese & Reese; 5.42 cents.

No. 27—1,000,000 pounds, Flat, cut 24x38 and 38x48 inches: Reese & Reese; 5.42 cents.

No. 28—800,000 pounds, Rolls, 38 inches wide (3-inch iron cores): Reese & Reese; 5.22 cents.

No. 29—800,000 pounds: Reese & Reese, 5.22 cents.

No. 30—40,000 pounds, bases 25x38 inches, 90x100 pounds. Flat, cut any size, minimum width 24 inches, maximum width 42 inches. Minimum order, one weight, 20,000 pounds: International Paper Company; 5.86 cents.

50 Per Cent Supercalendered Book

No. 33—25,000 pounds 50 per cent Rag Supercalendered Book Paper; bases, 25x38 inches, 80 and 90 pounds. Flat, cut 32x48 inches. Minimum order, one weight, 12,500 pounds: The Old Dominion Paper Company, Norfolk, Va.; 9.93 cents.

Half-Tone Paper

No. 34—180,000 pounds Half-Tone Paper; basis, 25x38 inches, 140 pound. Flat, cut 24x38 and 38x48 inches: P. H. Glatfelter Company, 5.49 cents.

Single-Coated Paper

No. 35—500,000 pounds Single-Coated Book Paper; basis, 25x38 inches, 140 pounds. Flat, cut 29x41, 36x46, 38x48, and 41x52 inches; the grain to run lengthwise of the sheet: Virginia Paper Company, (Inc.) Washington, D. C.; 7.2295 cents.

Double-Coated Paper

No. 36—150,000 pounds Double-Coated Book Paper; basis, 25x38 inches, 140 and 160 pounds. Flat, cut 24x32, 24x38, and 38x48 inches; the grain to run lengthwise of the sheet: Virginia Paper Company, (Inc.); 7.6175 cents.

50 Per Cent Rag Double-Coated Book

No. 37—150,000 pounds 50 per cent Rag Double-Coated Book Paper; bases 25x38 inches, 140 and 160 pounds. Flat, cut 24x32, 24x38, 32x42, 38x48, and 41x52 inches; the grain to run lengthwise of the sheet: Allied Paper Mills, Kalamazoo, Mich.; 12.04 cents.

Machine-Finish Lithograph Paper

No. 39—70,000 pounds Machine-Finish Lithograph Paper; basis, 25x38 inches, 160 pounds. Flat, cut 19x24 and 24x38 inches; the grain to run lengthwise of the sheet: Ross P. Andrews, Receiver, 6.79 cents.

50 Per Cent Rag Supercalendered Lithograph Paper

No. 40—100,000 pounds 50 per cent Rag Supercalendered Lithograph Paper, bases 25x38 inches, 160 pounds. Flat, cut 26x38 inches; the grain to run lengthwise of the sheet: Whitaker Paper Company; 9.92 cents.

Mimeograph Paper

No. 41—80,000 pounds Ground Wood Mimeograph Paper; basis, 25x38 inches, 76 pounds. Flat, cut 24¼x30½, 24½x32, 24½x38, and 26x42¼ inches; the grain to run lengthwise of the sheet: All bids rejected.

No. 43—1,400,000 pounds White Chemical Wood Mimeograph Paper Nos. 40 and 48. Flat, cut 24½x30½, 24½x32, 24½x38, and 26x42½ inches; the grain to run lengthwise of the sheet: P. H. Glatfelter Company; 5.38 cents.

No. 44—10,000 pounds, No. 56. Flat, cut 24½x32 inches; the grain to run lengthwise of the sheet. Minimum order 5,000 pounds: International Paper Company; 5.40 cents.

No. 45—25,000 pounds, Colored, buff, green and Pink, No. 40. Flat, cut 24½x30½, 24½x38, and 26x42½ inches; the grain to run lengthwise of the sheet. Minimum order, one color, 5,000 pounds: American Writing Paper Company; 6.99 cents.

30 Per Cent Rag Mimeograph

No. 47—1,000,000 30 per cent Rag White Mimeograph Paper, Nos. 40 and 48. Flat, cut 24½x30½, 24½x32, 24½x38, 26x42½, and 28½x34½ inches; the grain to run lengthwise of the sheet: Ross P. Andrews Receiver; 7.46 cents.

Writing Paper

No. 51—700,000 pounds Blue U. S. M. O. Safety Writing Paper, No. 32. Rolls 11 and 22 inches wide, 24 inches in diameter, (3-inch cores): Perfect Safety Paper Company, Holyoke, Mass.; 10.11 cents.

No. 52—20,000 White and Blue U. S. M. O. Writing Paper, No. 32. Rolls, 8½ inches wide, 24 inches in diameter (3-inch cores). Minimum order, either color, 4,000 pounds: Perfect Safety Paper Company; 9.50 cents.

No. 53—5,000 pounds Colored Safety Writing Paper, blue, gray, green, pink, salmon, and yellow, No. 40. Flat, cut 17x28, 21x32, and 22x34 inches. Minimum order, 1 color, 1000 pounds; Perfect Safety Paper Company; 14.75 cents.

Sulphite Writing, White and Colored

No. 54—25,000 pounds White Sulphite Writing Paper, No. 26. Flat, cut 21x32 and 23x42 inches. Minimum order, 5,000 pounds: Aetna Paper Company, Dayton, Ohio; 6.91 cents.

No. 55—800,000 pounds, No. 32. Flat, cut 21x32, 22x34, 24x38, 26x34½, and 32x42 inches: Whitaker Paper Company; 6.47 cents.

No. 56—1,000,000 pounds, Nos. 40 and 48. Flat, cut 21x32, 22x34, 23x36, 24x38, 28x34, and 32x42 inches: Whitaker Paper Company; 6.37 cents.

No. 57—120,000 pounds, No. 26. Rolls, minimum width 16 inches, maximum width 24 inches (3-inch cores): Whitaker Paper Company; 6.37 cents

No. 58—160,000 pounds, No. 32. Rolls, minimum width 16 inches; maximum width 24 inches (3-inch cores). Minimum order, 10,000 pounds: Whitaker Paper Company; 5.87 cents.

No. 29—120,000 pounds, Nos. 40 and 48. Rolls, minimum width 16 inches, maximum width 24 inches (3-inch cores): Whitaker Paper Company; 5.77 cents.

No. 60—25,000 pounds, Colored, blue, buff, green, pink, salmon and yellow, No. 26. Flat, cut 21x32, 22x34, 24x38, and 28x34 inches. Minimum order, one color, 5,000 pounds: Aetna Paper Company; 7.81 cents.

No. 61—550,000 pounds, Colored, as above. Nos. 32 and 40. Flat, cut 21x32, 22x34, 24x38, 28x34 and 32x42 inches. Minimum order, one color, 5,000 pounds: Aetna Paper Company; 6.81 cents.

100 Per Cent Rag White Writing, Vellum Finish, Tub-Sized, Air-Dried

No. 63—5,000 pounds 100 per cent Rag White Writing Paper, Vellum Finish, Tub-Sized, Air-dried, No. 56. Flat, cut 21x32 inches. Minimum order 2,500 pounds: Old Dominion Paper Company, 20.99 cents.

Map Paper

No. 64—10,000 pounds Lithograph-finish Map Paper, Nos. 32 and 40. Flat, cut 24x38, 30x40, 32x48, 36x52, and 38x48 inches. Minimum order, one substance, 5,000 pounds: Barton-Duer & Koch Paper Company, Washington, D. C.; 9.95 cents.

No. 65—200,000 pounds 50 per cent Rag Lithograph-finish Map Paper, Tub-sized, Air-dried, Nos. 40, 48 and 56. Flat, cut 36x44, 36x52, 38x48, 40x52, 41x50, and 44x64 inches; the grain to run lengthwise of the sheet: Old Dominion Paper Company; 11.999 cents.

No. 66—110,000 pounds 75 per cent Rag Lithograph-finish Map Paper, Tub-sized, Air-dried Nos. 32 and 40. Flat, cut 24x38, 30x40, 32x48, 36x52, 38x48, 40x52, and 44x64 inches; the grain to run lengthwise of the sheet: Barton-Duer & Koch Paper Company; 16.93 cents.

No. 67—10,000 pounds, Nos. 48 and 56. Flat, cut 38x44, 41x50, and 44x64 inches; the grain to run lengthwise of the sheet. Minimum order, one substance, 5,000 pounds. Barton-Duer & Koch Paper Company; 16.93 cents.

No. 69—250,000 pounds 100 per cent Rag White Chart Paper, Lithograph-finish, Tub-sized, Air-dried, No. 96. Flat, cut any size, minimum width, 24 inches, maximum width, 46 inches; the grain to run lengthwise of the sheet unless otherwise specified: Ross P. Andrews, Receiver; 24.94 cents.

Manifold Paper

No. 70—80,000 pounds White Sulphite Manifold Paper, No. 18. Flat, cut 17x28, 19x24, 21x32, and 22x34 inches; the grain to run 21-inch way on 21x32-inch size: Cauthorne Paper Company, Richmond, Va.; 9.17 cents.

No. 71—50,000 pounds, Colored, blue, buff, green, pink, salmon and yellow, No. 18. Flat, cut 17x28, 19x24, 21x32, and 22x34 inches; the grain to run 21 inch way on 21x32 inch size. Minimum order, one color, 5,000 pounds: International Paper Company; 10.50 cents.

No. 73—50,000 lbs. 50 per cent Rag White Manifold Paper, No. 14. Flat, cut 17x28, 19x24, 21x32, and 22x34 inches; the grain to run 21-inch way on 21x32 inch size. Minimum order 5,000 pounds: Barton-Duer & Koch Paper Company; 19.25 cents.

No. 74—350,000 pounds, No. 18. Flat, cut 17x28, 21x32, 22x34, and 24x38 inches; the grain to run 21-inch way on 21x32-inch size: Ross P. Andrews, Receiver; 16.43 cents.

No. 75—12,000 pounds, Colored, blue, buff, cherry, green, pink, salmon and yellow, No. 14. Flat cut 17x28, 19x24, 21x32, 22x34 inches; the grain to run 21-inch way on 21x32-inch size. Minimum order, one color, 5,000 pounds: Barton-Duer & Koch Paper Company; 21.35 cents.

No. 76—90,000 lbs., No. 18, flat, cut, 17x28, 21x32, 22x34, and 24x38 inches. Minimum order, 1 color, 5,000 pounds: Barton-Duer & Koch Paper Company; 18.59 cents.

No. 78—35,000 pounds 100 per cent, No. 14. Flat, cut 17x28, 19x24, 21x32, and 22x34 inches; the grain to run the 21-inch way on 21x32-inch size. Minimum order, 5,000 pounds: Old Dominion Paper Company; 35.217 cents.

No. 79—25,000 pounds, No. 18, cut as above; grain to run the 21-inch way on 21x32-inch size. Minimum order, 5,000 pounds: Old Dominion Paper Company; 29.467 cents.

No. 80—20,000 pounds, Colored, blue, buff, cherry, green, pink, salmon and yellow, No. 14. Flat, cut 17x28, 19x24, 21x32, 22x34, and 26x32 inches; the grain to run the 21-inch way on 21x32-inch size. Minimum order one color, 5,000 pounds: Old Dominion Paper Company; 32.217 cents.

No. 81—25,000 pounds, No. 18. Flat, cut 17x28, 21x32, 22x34, and 24x38 inches; the grain to run the 21-inch way on 21x32-inch size. Minimum order, one color, 5,000 pounds: Old Dominion Paper Company, 30.467 cents.

83—60,000 pounds 50 per cent Rag White Glazed Manifold Paper No. 16. Flat, cut 19x24, and 21x32 inches; the grain to run the 21-inch way on 21x32-inch size. Minimum order, 10,000 pounds: Dobler & Mudge, Baltimore, Md.; 22.89 cents.

Bond Paper

No. 101—25,000 pounds White Sulphite Bond Paper, No. 26. Flat, cut any size. Minimum width 17 inches, maximum width 32 inches. Minimum order, 5,000 pounds: Aetna Paper Company; 7.51 cents.

No. 102—500,000 pounds, Nos. 32 and 40. As above: Cauthorne Paper Company; 6.715 cents.

No. 103—10,000 pounds, No. 48, as above. Minimum order, 5,000 pounds: Dobler & Mudge; 6.80 cents.

No. 104—50,000 pounds Colored Ditto, blue, buff, green, pink, salmon, and yellow, Nos. 32 and 40. Flat, cut any size, minimum width 17 inches, maximum width 32 inches. Miniumm order, one color, 5,000 pounds: Cauthorne Paper Company; 7.78 cents.

No. 105—10,000 pounds, No. 48. Flat, as above. Minimum order, one color, 2,000 pounds: Dobler & Mudge; 7.80 cents.

No. 108—150,000 pounds 30 per cent Rag White Bond Paper, Tub-sized, Air-dried, No. 26. Flat, cut 21x32, 23x36, 24x38 and 28x34 inches: Aetna Paper Company 12.71 cents.

No. 109—750,000 pounds, No. 32. Flat, cut any size, minimum width 17 inches; maximum width 32 inches: Aetna Paper Company; 12.71 cents.

No. 109—750,000 pounds, No. 32. Flat, cut any size, minimum width 17 inches; maximum width 32 inches: Aetna Paper Compan, 9.41 cents.

No. 110—75,000 pounds, No. 32. Flat, cut 22¾x31½: Aetna Paper Company; 9.41 cents.

No. 111—850,000 pounds, No. 40. Flat, cut any size. Minimum width 17 inches; maximum width, 32 inches: Aetna Paper Company; 9.41 cents.

No. 112—850,000 pounds: Aetna Paper Company; 9.41 cents.

No. 113—900,000 pounds, No. 48. Flat, cut as above: Aetna Paper Company; 9.41 cents.

No. 114—50,000 pounds Colored, buff, cherry, green, pink, salmon and yellow, No. 26. Flat, cut any size, minimum width 17 inches, maximum wirth 32 inches. Minimum, one color, 3,000 pounds: Aetna Paper Company; 15.41 cents.

No. 115—300,000 pounds, No. 32. Flat, cut any size. Minimum 17 inches, maximum 32 inches: Aetna Paper Company, 10.41 cents.

No. 116—300,000 pounds, No. 40. Cut as above: Aetna Paper Company; 10.41 cents.

No. 117—250,000 pounds, No. 48. Flat, cut as above: Aetna Paper Company; 10.41 cents.

No. 120—50,000 pounds 50 per cent Rag White Bond Paper, Tub-sized, Air-dried, No. 26. Flat, cut 21x32, 23x36, 24x38, and 28x34 inches: Barton-Duer & Koch Paper Company; 14.64 cents.

No. 121—750,000 pounds, Nos. 32 and 40. Flat, cut any size. Minimum width 17 inches; maximum width, 32 inches: Ross P. Andrews, Receiver; 10.00 cents.

No. 122—80,000 pounds, No. 48 Flat, cut as above: Ross P. Andrews, Receiver; 13.00 cents.

No. 123—15,000 pounds, Colored, blue, buff, cherry, green, pink, salmon and yellow, Nos. 32 and 40. Flat, cut any size. Minimum width 17 inches, maximum width 32 inches. Minimum order, one color, one substance, 2,500 pounds: Barton-Duer & Koch Paper Company; 15.00 cents.

No. 125—6,000 pounds 75 per cent Rag White Bond Paper, Tub-sized, Air-dried, No. 26. Flat, cut any size. Minimum width 17 inches, maximum width 32 inches. Minimum order 2,500 pounds: Barton-Duer & Koch Paper Company; 19.25 cents.

No. 126—10,000 pounds, Nos. 32, 40 and 48. Flat, cut as above. Minimum order, one substance, 2,500 pounds: Whitaker Paper Company; 17.65 cents.

No. 128—10,000 pounds 100 per cent Rag White Bond Paper, tub-sized, air-dried, Nos. 32 and 40. Flat, cut as above. Minimum order, one substance, 2,000 pounds: Old Dominion Paper Company; 25.74 cents.

No. 129—4,000 pounds, No. 48. Cut as above. Minimum order, 2,000 pounds: Old Dominion Paper Company; 25.74 cents.

No. 130—12,000 pounds Declaration Bond Paper, Tub-sized, Air-dried. Nos. 32 and 40. Flat, cut 17x22 and 22x25½ inches. Minimum order, one substance, 3,000 pounds: Barton-Duer & Koch Paper Company; 30.00 cents.

No. 131—4,000 pounds Parchment Deed Paper, Tub-sized, Air-dried, No. 64. Flat, cut 33x34 inhces. Minimum order 2,000 pounds: Barton-Duer & Koch Paper Company, 27.25 cents.

Ledger Paper

No. 151—30,000 pounds White Sulphite Ledger Paper Nos. 56 and 64. Flat, cut any size. Minimum width 17 inches, maximum width 32 inches. Minimum order, one substance, 5,000 pounds: Dobler & Mudge, 7.55 cents.

No. 152—60,000 pounds, No. 80. Cut, as above. Minimum order 5,000 pounds: Dobler & Mudge, 7.55 cents.

No. 153—10,000 pounds, Colored, blue, buff, green, pink, salmon and yellow, No. 80. Flat, cut 21x32½ inches. Minimum order, one color, 2,000 pounds: Dobler & Mudge, 8.55 cents.

No. 154—40,000 pounds 30 per cent Rag White Ledger Paper, Tub-sized, Air-dried, Nos. 48 and 56. Flat, cut 20x28, 21x32, 24x38, 28x29, and 28x34 inches. Minimum order, one substance, 5,000 pounds. Barton, Duer & Koch Paper Company, 10.74 cents.

No. 155—30,000 pounds, No. 64. Flat, cut 21x32 and 23x36 inches. Minimum order, 5,000 pounds. Barton, Duer & Koch Paper Company, 10.74 cents.

No. 156—40,000 pounds, No. 72. Flat, cut 20x28, 21x32, 24x38, and 28x34 inches. Minimum order 5,000 pounds. Barton, Duer & Koch Paper Company, 10.74 cents.

No. 157—30,000 pounds Colored, blue, buff, green, pink, salmon and yellow, Nos. 56, 64 and 72. Flat, cut as above. Minimum order, one substance, one color, 3,000 pounds. Barton, Duer & Koch Paper Company, 11.74 cents.

No. 160—70,000 pounds 50 per cent Rag White Ledger Paper, Tub-sized, Air-dried, Nos. 48 and 56. Flat, cut 18½x36, 18½x40¼, 20x28, 24x38, 28x29, and 28x34 inches. Minimum order, one substance, 5,000 pounds. Barton, Duer & Koch Paper Company, 12.30 cents.

No. 161—60,000 pounds, No, 64. Flat, cut 20x28, and 23x36 inches. Minimum order, 5,000 pounds. Barton, Duer & Koch Paper Company, 12.30 cents.

No. 162—80,000 pounds, Nos. 72 and 80. Flat, cut 20x28, 21x32, 24x38, and 28x34 inches. Barton, Duer & Koch Paper Company, 12.30 cents.

No. 163—25,000 pounds, No. 88. Flat cut 21x32½ inches. Minimum order 5,000 pounds. Barton, Duer & Koch Paper Company, 12.30 cents.

No. 164—50,000 pounds Colored, blue, buff, green, cherry, pink, salmon and yellow. Nos. 56, 64 and 72. Flat, cut 18½x36, 18½x40¼, 19x24, 21x32, 23x36, and 28x34 inches. Minimum order, one substance, one color, 3,000 pounds. Barton, Duer & Koch Paper Company, 13.55 cents.

No. 165—15,000 pounds, No. 88. Flat, cut 20x32½ inches. Minimum order, one color, 4,000 pounds. Barton, Duer & Koch Paper Company, 13.55 cents.

No. 168—30,000 pounds 75 per cent Rag White Ledger Paper, Tub-sized, Air-dried, Nos. 48 and 56. Flat, cut 21x32, 24x38, 28x29, and 28x34 inches. Minimum order, one substance, 5,000 pounds. Barton, Duer & Koch Paper Company, 15.66 cents.

No. 169—50,000 pounds, No. 64. Flat, cut 21x32, 23x36, 24x38, inches. Minimum order, 5,000 pounds. Barton, Duer & Koch Paper Company, 15.66 cents.

No. 170—20,000 pounds, Nos. 72 and 80. Flat, cut 20x28, 21x32, 24x38, and 28x34 inches. Minimum order, one substance, 5,000 pounds. Barton, Duer & Koch Paper Company, 15.66 cents.

No. 171—30,000 pounds, No. 88. Flat, cut 21x32½ inches. Minimum order, 5,000 pounds. Barton, Duer & Koch Paper Company, 15.66 cents.

No. 172—50,000 pounds colored, blue, buff, cherry, green, pink, salmon and yellow, Nos. 56, 64 and 72. Flat, cut 19x24, 21x32, 23x36, and 28x34 inches. Minimum order, one substance, one color, 3,000 pounds. Barton, Duer & Koch Paper Company, 16.90 cents.

No. 173—12,000 pounds, No. 88. Flat, cut 21x32½ inches. Minimum order, one color, 4,000 pounds. Barton, Duer & Koch Paper Company, 16.90 cents.

No. 176—30,000 pounds 100 per cent Rag White Ledger Paper, Tub-sized, Air-dried, No. 48. Flat, cut 21x32, 22¾x31½, 23x36, 24x38, and 28x34 inches. Minimum order, 5,000 pounds. Hawthorne Paper Company, Kalamazoo, Mich., 21.75 cents. (New muslin clippings.)

No. 177—40,000 pound, No. 56. Flat, cut 20x28, 21x32, 23x36, 24x38, and 28x34 inches. Minimum order, 5,000 pounds. Hawthorne Paper Company, 21.75 cents. (New muslin clippings).

No. 178—20,000 pounds, No. 64. Flat, cut 18½x42, 21x32, 23x36, and 28x34 inches. Minimum order, 5,000 pounds. Hawthorne Paper Company, 21.75 cents. (New muslin clippings).

No. 179—10,000 pounds, No. 72. Flat, cut 20x28, 21x32, 24x38 and 28x34 inches. Minimum order, 5,000 pounds. Hawthorne Paper Company, 21.75 cents. (New muslin clippings.)

No. 180—8,000 pounds, No. 80. Flat, cut 21x32½, and 21x42 inches. Minimum order, 4,000 pounds. Hawthorne Paper Company, 21.75 cents. (New muslin clippings.)

No. 181—20,000 pounds, No. 88. Flat, cut 20½x24½, 21x32½, and 22¾x31½ inches. Minimum order, 5,000 pounds. Carew Manufacturing Company, So. Hadley Dalls, Mass., 24.40 cents. (New cotton cuttings from shirt and underwear factories).

Index Paper

No. 184—100,000 pounds White sulphite Index, single-ply; bases, 22½x28½ inches, 182 and 230 pounds. Flat, cut 21x32½, 22½x28½, and 24½x32½ inches, projecting colored-paper marker between each 100 sheets. Minimum order, one weight, 10,000 pounds. Cawthorne Paper Company, 7.23 cents.

No. 185—5,000 pounds, bases 22½x28½ inches, 280 and 362 pounds. Flat, cut 21x32½ and 22½x28½ inches, paper markers as above. Minimum order, one weight, 2,500 pounds. Virginia Paper Company, Washington, D. C., 7.491, C.L., 8.035 L.C.L.

No. 186—6,000 pounds Colored, blue, buff, fawn, green, pink, salmon and yellow; bases 22½x28½ inches, 182 and 230 pounds. Flat, cut 21x32½ and 22½x28½ inches. Marked as above. Minimum order, one color, one weight, 2,000 pounds. No bidders.

No. 187—6,000 pounds, bases 22½x28½ inches, 280 and 362 pounds. Flat, cut 21x32½ and 22½x28½ inches. Markers as

above. Minimum order, one color, one weight, 2,000 pounds. No bidders.

No. 187—6,000 pounds, bases 22½x28½ inches, 280 and 362 pounds. Flat, cut 21x32½ and 22½x28½ inches, markers as above. Minimum order, one color, one weight, 2,000 pounds. No bidders.

No. 190—50,000 pounds 50 per cent Rag White Index, single-ply; basis, 22½x28½ inches, 182 and 230 pounds. Flat, cut 21x32½ inches and 22½x28½ inches. Minimum order, one weight, 5,000 pounds. American Writing Paper Company, Inc., 14.43 cents.

No. 191—15,000 pounds, bases 22½x28½ inches, 280 and 362 pounds. Flat, cut 21x32½ and 22½x28½ inches, markers as above. Minimum order, 1,500 pounds. Carew Manufacturing Company, 26.90 cents.

No. 192—55,000 pounds colored, blue, buff, fawn, green, pink, salmon and yellow basis 22½x28½, 1820 and 230 pounds. Flat, cut 21x32½ and 22½x28½ inches, markers as above. Minimum order, one color, one weight, 2,000 pounds Carew Manufacturing Company, 18.90 cents.

No. 193—25,000 pounds, 280 and 362 pounds. Flat, cut as above. Minimum order, one color, one weight, 2,000 pounds. Carew Manufacturing Company, 31 cents.

No. 196—100,000 pounds 100% Rag White and Cream Index, Single-ply, Tub-sized, Air-dried; basis 22½x28½ inches, approximately 206 pounds. Flat, cut 20½x30½ and 21x32½ inches. Carew Manufacturing Company, 21.50 cents.

Tissue Papers

No. 197—5,000 pounds White Tissue Paper. Flat, 21x32 inches, 18 pounds. Minimum order, 1,000 pounds. Virginia Paper Company, 11.64 cents.

No. 198—1,000 pounds Facing Stereo Tissue Paper; bases 19x24 inches, 9 pounds. Rolls, 24 inches wide (3-inch cores). Minimum order, 500 pounds. Cauthorne Paper Company, 88.24 cents.

Cover Paper

No. 201—170,000 pounds Colored Coated Cover Paper, India tint, light green, and primrose. Flat, 26½x41 inches, 208 pounds. The Old Dominion Paper Company, 7.649 cents.

No. 203—20,000 pounds 25 per cent rag colored Antique cover paper, Quaker drab, robin's egg and terra cotta. Flat, 20x25 inches, 96 pounds, in wrapped bundles, with projecting colored markers between each 500 sheets. Minimum order, one color, 2,500 pounds. Ross P. Andrews, Receiver, 7.46 cents.

No. 204—120,000 pounds, smooth, blue, brown, granite, green, pink, tea, and yellow; basis 20x26 inches, 100 pound. Flat, cut 20x25, and 33x46 inches, in wrapped bundles, as above. Minimum order, one color, 5,000 pounds. Ross P. Andrews, Receiver, 7.42 cents.

No. 205—75,000 pounds 50 per cent rag, Colored Antique Cover paper, dawn, sage, goblin, blue, suede, khaki, and moss green. Flat, 20x25 inches, 96 pounds, in wrapped bundles, as above. Minimum order, one color, 5,000 pounds. Ross P. Andrews, Receiver, 8.49 cents.

No. 206—1,000 sheets Cloth-lined Cover paper, brown, quaker, drab, russet, and white; bases, 20x26 inches; 130 pounds to 1000 sheets. Flat, cut 20x25 inches. All bids rejected.

No. 207—4,000 pounds. Flat, cut 21x32 inches. All bids rejected.

No. 208—5,000 pounds. Flat, cut 24x36 inches. All bids rejected.

Manila Paper

No. 209—250,000 pounds Wood Manila Paper; bases, 24x36 inches, 60 to 120 pounds. Flat, cut 21x32 and 25x38 inches, in wrapped bundles, with projecting colored paper markers between each 500 sheets. Lindemeyer & Harker, Baltimore, Md., 4.05 cents.

No. 210—240,000 pounds, bases, 24x36 inches, 60 to 120 pounds. Rolls, 9, 18, 21 and 27½ inches (3-inch cores, except 9-inch rolls, which shall be wound on wooden plugs, 1½-inch holes). International Paper Company, 4.11 cents.

No. 211—80,000 pounds Sulphite Manila Paper; bases, 24x36 inches, 100 to 160 pounds. Flat, any size, in wrapped bundles, with projecting colored paper marker between each 500 sheets. Ross P. Andrews, Receiver, 6.19 cents.
(Orono Pulp & Paper Company, Bangor, Me.)

No. 212—60,000 pounds, 160 pounds. Rolls 18-inches wide, (3-inch iron cores). Ross P. Andrews, Receiver, 6.09 cents.
(Orono Pulp & Paper Company, Bangor, Me.)

No. 213—5,000 pounds Rope Manila Paper; basis 24x36 inches, 120 pounds. Flat, cut 24x36, 24x38, 27x38, 36x38, and 40x42 inches, in wrapped bundles of 500 sheets each. Minimum order, 5,000 pounds: American Writing Paper Company (Inc.); 13.44 cents.

No. 214—5,000 pounds, 140 pound. Flat, cut 24x36, 25x38, and 36x48 inches; wrapped in bundles as above. Minimum order, 5,000 pounds: American Writing Paper Company (Inc.); 13.44 cents.

No. 215—10,000 pounds, 160 pounds. Flat, cut 24x36, 27x38, 33x33, 36x48, 28x38, and 40x40 inches, wrapped as above. Minimum order, 5,000 pounds: American Writing Paper Company (Inc.); 13.44 cents.

No. 216—45,000 pounds, 280 pounds. Flat, cut 24x36 and 24x38 inches, wrapped as above. Minimum order, 10,000 pounds: Virginia Paper Company (Inc.); 10.10 cents.

Kraft Paper

No. 217—240,000 pounds No. 2 Kraft Wrapping Paper; bases 24x36 inches, 60 to 160 pounds. Flat, cut any size, in wrapped bundles of 500 sheets: Ross P. Andrews, Receiver; 4.735 cents.

No. 218—400,000 pounds. Cut any size, folded, in wrapped bundles of 500 sheets each: Ross P. Andrews, Receiver; 4.735 cents.

No. 219—300,000 sheets. Rolls, 11½, 24, 36, 39 and 48 inches wide, wound on wooden plugs, 1½ inch hole, or on 3-inch iron cores as may be specified: The Barton, Duer & Koch Paper Company; 4.59 cents.

No. 220—40,000 pounds No. 1 Kraft Paper, bases, 24x36 inches, 120 and 160 pounds. Flat, cut any size, in wrapped bundles of 500 sheets: Whitaker Paper Company, 5.72 cents.

Manila Tag Board

No. 221—100,000 pounds High-Finish Sulphite Manila Tag Board; bases, 24x36 inches, 160 to 280 pounds. Flat, cut any size, minimum width 24 inches, maximum width 38 inches, in wrapped bundless of 500 sheets: American Writing Paper Co. (Inc.); 6.87 cents. (Own mill.)

No. 222—40,000 pounds of Wood Manila Tag Board; basis 22½x28½ inches, 150 pounds. Rolls, 22 inches wide (6-inch cores): Dobler & Mudge; 4.16 cents.

No. 223—150,000 pounds, 180 pounds. Flat, cut 12x18 and 14½x17½ inches, in wrapped bundles of 500 sheets each: Whitaker Paper Company, 4.115 cents.

No. 224—200,000 pounds Manila Calendered Tag Board; basis, 22½x28½ inches, approximately 148 pounds. Rolls, 23½ and 26¾ inches wide (6-inch cores): Barton, Duer & Koch Paper Company, 7.42 cents.

No. 225—80,000 pounds Colored, blue, brown, green, pink, red, salmon and yellow; basis, 22½x28½ inches, approximately 148 pounds. Rolls, 23½ and 26¾ inches wide (6-inch cores). Minimum order, one color, 5,000 pounds: All bids rejected.

Jute Tag

No. 226—80,000 pounds Jute Tag Board; bases, 22½x28½ inches, 200 to 280 pounds. Flat, cut any size, minimum width 22 inches, maximum width, 32 inches, in wrapped bundles of 500 sheets each. Minimum order, one weight, 5,000 pounds: Virginia Paper Company (Inc.); 8.79 cents.

Card Board

No. 301—45,000 pounds Manila Cardboard; bases, 22x28 inches, 232, 268, and 392 pounds. Flat, cut 17x28, 21x32, and 22½x28½

inches, wrapped as above, with colored markers each 100 sheets. Minimum order, one weight, 3,000 pounds: Whitaker Paper Company; 5.45 cents.

RAILROAD BOARD, WHITE AND COLORED

No. 302—70,000 sheets White Railroad Board. Flat, 22x28 inches, 4 ply, each 100 sheets fully banded, packed in wooden cases. Minimum order, 5,000 sheets: Barton, Duer & Koch Paper Company; 26.03 cents.

No. 303—10,000 sheets, 8 ply, packed as above, minimum order, 5,000 sheets: Barton, Duer & Koch Paper Company; 37.90 cents.

No. 304—15,000 sheets, 14 ply, each 50 sheets wrapped and packed as above. Minimum order, 500 sheets: Barton, Duer & Koch Paper Company; 56.65 cents.

No. 305—300,000 sheets, Colored, ash gray, blue, buff, green, lemon, and orange. Flat 22x28 inches, 4 ply, each 100 sheets fully banded, packed in wooden cases. Minimum order, one color, 5,000 sheets: United Paperboard Company (Inc), New York City; 28.72 cents.

No. 306—250,000 pounds Colored Wood Bristol Board, buff, blue, gray, green, melon, pink, quaker drab, and yellow. Flat, 21x31 inches, 204 pounds, in wrapped bundles of 500 sheets each, with projecting colored-paper marker between each 100 sheets: Ross P. Andrews, Receiver; 4.828 cents.

No. 307—300,000 pounds, blue brown, buff, gray, green, melon, pink, and yellow; basis 22½x28½ inches, 200 pounds. Rolls, 20 inches wide (6-inch cores): Reese & Reese; 4.78 cents (car lots).

No. 308—300,000 pounds, Rolls, 20 inches wide (6-inch cores).

No. 309—11,000,000 pounds U. S. Postal Card Bristol Board; basis, 22½x28½ inches, 188 pounds. Rolls 33 inches wide and 34 inches in diameter (6-inch cores): The Jessup & Moore Paper Company; 4.92 cents.

MISCELLANEOUS PAPER

No. 351—3,000 pounds White Paraffin Paper. Flat, 24x38 inches, 32 pounds. Minimum order, 1,000 pounds: Virginia Paper Company, Inc.; 12.10 cents.

No. 352—6,000 pounds White Gummed Paper. Flat, cut 17x22 inches, 40 pounds, exclusive of weight of gum used; and 20x25 inches, 54 pounds, exclusive of weight of gum used. Minimum order, one size, one weight, 1,000 pounds: Eureka Specialty Printing Company, Scranton, Pa.; $6.60, 17x22; $8.90, 20x25.

No. 354—24,000 pounds White Blotting Paper. Flat, 19x24 inches, 160 pounds, in wrapped bundles of 250 or 500 sheets. Minimum order, 4,000 pounds: Whitaker Paper Company; 6.425 cents.

No. 355—20,000 pounds Colored Blotting Paper (Manufacturers' stock shade) buff and salmon. Flat, 19x24 inches, 160 pounds, in wrapped bundles of 250 or 500 sheets. Minimum order, 4,000 pounds: Whitaker Paper Company; 6.425 cents.

No. 356—30,000 pounds 25 per cent Rags White Blotting Paper. Flat, 19x24 inches, 160 pounds, in wrapped bundles of 250 or 500 sheets. Minimum order, 4,000 pounds: Whitaker Paper Company; 7.44 cents.

No. 357—40,000 pounds Colored (Manufacturers' stock shade), buff and salmon. Flat 19x24 inches, 160 pounds, in wrapped bundles of 250 or 500 sheets. Minimum order, one color, 4,000 pounds: Whitaker Paper Company; 7.44 cents.

No. 258—15,000 pounds Desk Blotting Paper, blue and buff. Flat, 19x24 inches, 200 pounds, in wrapped bundles of 250 or 500 sheets. Minimum order, one color, 5,000 pounds: Virginia Paper Company, Inc.; 6.64 cents.

No. 359—100,000 pounds, moss green. As above. Minimum order, 10,000 pounds: Virginia Paper Company, Inc.; 7.04 cents.

No. 360—3,000 pounds White Stereotype Molding Paper for paper process; basis 19x24 inches, 120 pounds. Rolls, 24 inches wide (3-inch cores). Minimum order, 1,000 pounds: Barton, Duer & Koch Paper Company; 10.0 cents.

No. 361—2,000 pounds Red, 80 pounds. Rolls, 24 inches wide (3-inch cores), minimum order 1,000 pounds: Barton, Duer & Koch Paper Company; 13.0 cents.

No. 362—20,000 pounds Oiled Manila Tympan Paper; basis, 24x36 inches, approximately 200 pounds. Rolls, 38, 48, and 55 inches wide; maximum weight 150 pounds; wound on wooden plugs, 1½ inch hole. Minimum order, 5,000 pounds: Barton, Duer & Koch Paper Company; 8.40 cents.

No. 363—2,000 pounds Plate Wiping Paper for Embossing Presses; basis, 24x36 inches, 100 pounds. Rolls, 24 inches wide, wound on wooden plugs, 1½ inch hole. Minimum order 1,000 pounds: Ross P. Andrews, Receiver; 8.22 cents.

No. 364—6,000 pounds Back Lining Paper for Case-making Machines; basis 24x36 inches, 180 pounds. Rolls, 12 inches diameter, 9⅛, 11⅜, and 24 inches wide, wound on wooden pegs, 1½-inch hole. Minimum order, 2,000 pounds: Cauthorne Paper Company; 4.68 cents.

No. 365—20,000 sheets Red Pressboard. Flat, 24x32 inches, thickness .0140 inch. Minimum order, 2,000 sheets: Virginia Paper Company, Inc.; $6.90 per 100 sheets.

No. 366—20,000 Gray. Flat, 30x36 inches, thickness .0300 inch. Minimum order 5,000 sheets: Virginia Paper Company; $21.11 per 100 sheets.

No. 401—1,000 pounds News Board. Flat, cut 26x38 inches, No. 120. (To be trimmed square on four sides). Minimum order 500 pounds: Cauthorne Paper Company; 2.43 cents.

No. 402—500,000 pounds Chip Board, basis 26x38 inches, No. 50. Flat, cut 21½x32½, 24½x38, 26x38, and 32½x42½ inches: United Paperboard Company (Inc.); 1.955 cents.

No. 403—150,000 pounds Marble grained lined board; basis 26x38 inches, No. 50. Flat, cut 22x32 inches: Whitaker Paper Company; 3.657 cents.

No. 404—40,000 pounds Strawboard. Flat, cut 26x38 inches, No. 50: All bids rejected.

No. 405—10,000 pounds Lined Strawboard. Flat, cut 26x38, No. 50: Barton, Duer & Koch Paper Company; 3.68 cents.

No. 406—80,000 pounds Lined Boxboard, lined one side, basis 26x38 inches, No. 40. Flat, cut 24½x34 inches. Minimum order 36,000 pounds: La Boiteaux Company, Cincinnati, Ohio; 2.55 cents.

No. 407—680,000 pounds Binders Board, hard rolled, No. 2 quality. Nos. 16, 20, 25, 30, 40. Flat, cut 25x30 inches. Minimum order 36,000 pounds: Dobler & Mudge, 2.97 cents.

No. 408—200,000 pounds Binders Board, hard rolled, best quality. Nos. 18, 20, 25, 30, 35, 40, 45. Flat, cut 20x30 inches, and 22x28 inches: Barton, Duer & Koch Paper Company; 5.00 cents.

To Study Business Trends

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 6, 1928—Shifts and trends in the American business world are to be studied by a special committee appointed by Secretary of Commerce, Herbert Hoover. The names of the committee have not yet been made public but Secretary Hoover, himself, will act as chairman, and the Bureau of Economic Research of New York City will make the fact finding background. It is understood that the work will be carried on with private funds which have been donated for the purpose amounting to from $100,000 to $150,000, the name of the donor not having ben made public. This will be somewhat along the lines of the work done on the business cycle some years ago.

Old Mullen Bros. Mill at St. Joseph Burned

[FROM OUR REGULAR CORRESPONDENT]

KALAMAZOO, Mich. February 1, 1928—The old Mullen Brothers mill at St. Joseph was destroyed by fire, Sunday afternoon of last week. Loss is placed at $200,000, with $35,000 in insurance. The building, mostly of frame work, burned rapidly, and the loss extended to both machinery and stock on hand. Several explosions were heard within the mill, but no personal injuries resulted. The cause of the fire is a mystery.

Only recently Chicago and St. Joseph capitalists had formed the St. Joseph Box and Board Company to take over the plant and operate it.

New Paper Carton Plant for Fox River Valley

Site of Valley Paper Mills, Located at West Menasha, Purchased by Wisconsin Carton Co., of Neenah—Officials Not Yet Ready to Reveal Building Plans—Arrangements for Financing Project Accomplished—Capital Stock of Wisconsin Carton Co. to be Doubled

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., February 6, 1928.—Erection of a new carton factory in the Fox River Valley is seen in the announcement made this week by the Wisconsin Carton Company, of Neenah, Wis., that it has purchased the mill site of the Valley Paper Mills, located at West Menasha, Wis. None of the details of the building plans has been revealed by the officers.

Arrangements for the financing of the project were also accomplished by a series of amendments to the articles of incorporation. The capital stock has been increased from $100,000 to $200,000, consisting of 1,000 shares of common stock at $100 a share, and 1,000 shares of preferred stock at $100.

The Wisconsin Carton Company was incorporated in July, 1927, and it was reported at that time that the plant of the defunct Elm Paper Box Company, Neenah, was to be taken over and placed in operation. The principal owners are James T. Mader, of Appleton, Wis., Alfred J. Danke, of Neenah, Wis., and Adam Schwartzbauer, Menasha, Wis.

With the purchase of this mill site, liquidation of the Valley Paper Mills practically is completed. This was a post-war concern that intended to erect a mill for the manufacture of glassine, grease-proof paper and other products. The project was abandoned after the foundation of the mill was completed, because of the post-war slump. Several attempts were made to establish the company, but the project finally was given up and liquidation authorized.

Ahdawagam's Fine Report

An increase in business of 25 per cent for the year 1927, and an outlook for greater production in 1928 are shown by reports submitted at the annual meeting of stockholders of the Ahdawagam Paper Products Company, of Wisconsin Rapids, Wis., held this week. C. K. Crouse, sales manager, stated that the business already contracted for is in excess of a year ago.

All members of the board of directors were re-elected. They are: Henry A. Sampson, president; I. P. Witter, vice president; F. R. Walsh, secretary-treasurer and manager, and G. W. Mead and P. C. Daly. The company now has about seventy persons on its payroll.

Rhinelander Building Campaign

Need for additional productive capacity has made it necessary for the Rhinelander Paper Company, of Rhinelander, Wis., to embark upon a building campaign. A new power house and a new finishing room are to be started at once, with the expectation of completing the work by June 1st. A new paper machine also will be installed. The daily capacity thus will be increased from 20 tons of glassine paper to about 35 tons. A larger working force will be added as soon as the improvements are completed.

Hummel & Downing Provide for Expansion

Provisions for future expansion have been made by the Hummel and Downing Company, box manufacturers, Milwaukee, Wis., by the purchase of a large tract of land. According to George E. McKowen, secretary, the deal includes seventeen lots fronting on the Milwaukee River, and having a depth of 152 feet. The deal involves an expenditure of about $50,000.

Safety Conference Plans

All plans for the fourth annual Fox River Valley Safety Conference will be completed at a meeting of representatives of various industries at Oshkosh, Wis., early next week. The conference is to be held at Oshkosh in June, with an approximate attendance of 1,500. It is expected that Glenn Frank, president of the University of Wisconsin, will be the principal speaker. Those from the paper industry assisting in the arrangements are H. J. Hoyman, Neenah, Wis., William Ashe, Kaukauna, Wis., and W. J. Peacock, Green Bay, Wis.

Paper Mill Workers Wages

Wages of paper mill workers averaged $25.25 weekly during the last year, according to a survey made among Wisconsin industries. This industry compared quite favorably with other lines of occupation, and represents almost the average per week for all plants of every kind, since the general wage was found to be $25.45. Only a few trades were above the paper and pulp mills, including machinery, printing, construction and several specialty lines.

Mill Executives Honored

Educational circles have chosen two paper mill executives within the last week for high honors, George W. Mead, president of the Consolidated Water Power and Paper Company, of Wisconsin Rapids, Wis., and S. F. Shattuck, treasurer of the Kimberly-Clark Company, Neenah, Wis.

Mr. Mead has been appointed by Governor Fred R. Zimmerman as a member of the Board of Regents of the University of Wisconsin. The manufacturer is a graduate of that institution and has been keenly interested in its affairs. He is also a trustee of Beloit College, Beloit, Wis.

The post given Mr. Shattuck is that of High Commissioner of the Wisconsin Interscholastic Athletic Association. This represents a new athletic conference embodying Lawrence, Beloit, Ripon and Carroll colleges, all of Wisconsin. He heads the executive board, composed of faculty representatives from each school. Mr. Shattuck is a trustee of Carroll College, of Waukesha, Wis., and Mrs. Shattuck is a trustee of Lawrence College, Appleton, Wis.

News of the Industry

Mills of the Marinette and Menominee Paper Company, at Marinette, Wis., and Menominee, Mich., have been entered in the National Safety Contest starting January 1. Large bulletins have been posted at the plant and are changed frequently, stimulating the employees to greater safety. These are illuminated so they may be seen at night as well. The company maintains a crew which builds and maintains safety guards on all machinery. Daily safety inspections have been started, and are found to be of considerable value.

A fatal accident occurred Thursday afternoon at the Kimberly-Clark Company's mill at Kimberly, Wis. William Karlmund, 45, of Manitowoc, Wis., was killed when he fell fifteen feet from the hopper of a drum barker in the woodroom. The victim was not an employee of the mill, but was working for the Manitowoc Engineering Works, which has a crew on duty there.

H. E. Moore has been appointed superintendent of the Menasha Paper Mills, Menasha, Wis., to succeed Charles Martin. The latter has left for the Pacific Coast to take a new position there. Mr. Moore was in charge of the Ball Brothers Paper Mills, of Noblesville, Ind. The Menasha plant was closed for a few days this week while additional electric motors were being installed, but will resume on Monday, February 6.

Fire damage was caused by a blaze this week at the Peshtigo Paper Company, Peshtigo, Wis. A chip bin high in the tower of the east side mill became ignited and it took firemen an hour and a half to subdue the flames.

Paper Production Decreases for December

The total production of paper for the month of December, for all identical mills reporting to the American Paper and Pulp Association, was 530,505 tons as compared with 557,392 tons for November, a decrease of 5 per cent.

Total identical mill production of all grades of pulp for December totaled 186,986, a 2 per cent decrease over the production of 190,804 tons in November.

COMPARATIVE REPORT OF PAPER OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF DECEMBER, 1927

Grade	Number of mills	Practical production capacity	Production	% of capacity	Shipments	% of capacity	Stocks on hand end of month
News Print	71	147,498	119,312	81	123,883	84	20,877
Book	66	113,516	94,683	83	96,539	85	53,436
Paper Board	116	264,238	175,519	66	173,225	66	44,331
Wrapping	73	62,498	48,849	78	46,464	74	48,276
Bag	20	15,496	12,340	80	11,059	71	10,166
Fine	74	33,670	30,509	91	29,812	89	40,835
Tissue	46	14,352	12,943	90	13,092	91	13,814
Hanging	9	7,202	5,806	81	6,137	85	3,257
Felts and Building	13	13,702	9,310	68	10,065	73	2,029
Other Grades	60	29,510	21,234	72	21,219	72	17,698
Total—All Grades		701,682	530,505	76	531,495	76	254,719

COMPARATIVE REPORT OF WOOD PULP OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF DECEMBER, 1927

Grade	Number of mills	On hand first of month	Production for month	Used during month	Shipped during month	On hand end of month
Ground Wood Pulp	85	91,756	83,546	80,900	3,978	90,424
Sulphite News Grade	38	9,384	36,435	33,214	2,508	10,097
Sulphite Bleached	22	2,495	23,536	21,348	1,945	2,738
Sulphite Easy Bleaching	7	1,844	3,484	3,107	285	1,936
Sulphite Mitscherlich	6	408	7,378	5,868	1,263	655
Sulphate Pulp	10	2,918	15,237	14,173	1,103	2,879
Soda Pulp	11	2,378	17,325	13,016	3,768	2,919
Pulp—Other Grades	2	162	45	.....	42	165
Total—All Grades		111,345	186,986	171,626	14,892	111,813

PAPER REVIEW FOR TWELVE MONTHS IN 1927

Grade	Number of mills	Production net tons	Shipments net tons	Stocks on hand end of month, net tons
News Print	71	1,485,495	1,474,521	20,877
Book	63	1,101,348	1,094,414	53,018
Paper Board	113	2,301,768	2,303,656	43,022
Wrapping	74	617,396	601,338	48,756
Bag	23	151,668	150,560	10,166
Fine	74	359,051	359,922	40,835
Tissue	53	173,183	171,875	14,662
Hanging	9	68,760	68,460	3,257
Felts and Building	13	121,818	122,026	2,029
Other Grades	60	263,889	263,172	17,698
Total—All Grades		6,644,376	6,609,944	254,320

WOOD PULP REVIEW FOR TWELVE MONTHS IN 1927

Grade	Number of mills	Production	Used	Shipped	On hand end of month
Ground Wood Pulp	91	1,025,656	1,033,039	32,597	90,424
Sulphite News Grade	38	481,093	447,276	32,467	10,097
Sulphite Bleached	23	284,661	253,758	31,576	2,738
Sulphite Easy Bleaching	7	48,135	40,964	6,153	1,936
Sulphite Mitscherlich	6	81,791	70,278	11,654	655
Sulphate Pulp	10	198,717	180,974	17,090	2,879
Soda Pulp	11	200,283	146,811	53,275	2,919
Pulp—Other Grades	2	524	186	185	165
Total—All Grades		2,320,860	2,173,286	184,997	111,813

Patent Suit Against L. L. Brown Dismissed

The suit in equity brought against the L. L. Brown Paper Company, of Adams, Mass., by the Byron Weston Company, of Dalton, Mass., charging infringement of a patent covering its process of making flexible hinge paper has been terminated by the withdrawal of an appeal from the decision of the United States District Court, at Boston, which found in favor of the L. L. Brown Paper Company.

Following the decree of Judge Morton, who ruled that the L. L. Brown Paper Company's improved method of making a flexible hinge in paper was not an infringement of the plaintiff's method, the Byron Weston Company filed an appeal to the Circuit Court of Appeals at the same time made a request for a re-hearing by Judge Morton The re-hearing was granted but Judge Morton declined to alter his original opinion and his decree in favor of the L. L. Brown Paper Company now becomes final by reason of the withdrawal of the appeal.

Kalamazoo Mill Executives Discuss Stream Improvement

KALAMAZOO, Mich., February 6, 1928.—The American Paper and Pulp Association's engineer, C. M. Baker, met with representatives of the Kalamazoo mills last week to discuss one of the common and important problems of the industry, namely, waste utilization and stream improvement. Mr. Baker outlined the program of the association's national committee on waste utilization and stream improvement, and discussed his activities in this matter since the Chicago meeting of the committee in November last.

The following mills, through their representatives, as listed below, assured Mr. Baker of their desire to cooperate with him in effort to develop waste utilization and stream improvement through the pooling of their experience and research: Felix Pagenstecher, President, Bryant Paper Company, Kalamazoo; Geo. W. Gilkey, Secretary, Treasurer, Michigan Power Company, Plainwell; J. Kindleberger, President and R. A. Hayward of Kalamazoo Vegetable Parchment Company, Kalamazoo; W. A. Hodge, Secretary & Manager, Western Board and Paper Company, Kalamazoo; Wm. J. Lawrence, Western Paper Making Chemical Company, Kalamazoo; Geo. Gerpheide, President, Hawthorne Paper Company, Kalamazoo; Lewis Dickenson, Standard Paper Company, Kalamazoo; E. Stone, Mac Sim Bar Company, Ostego; Merrill B. King, President, Rex Paper Company, Kalamazoo; G. S. Davis, -Secretary, Allied Paper Mills, Kalamazoo; A. E. Curtenius, Secretary, Treasurer, Kalamazoo Paper Company, Kalamazoo, and W. M. Loveland, President, Watervliet Paper Company, Kalamazoo.

Mr. Baker reported at some length on the present situation regarding cooperation between state and mill officials, emphasizing the desirability of ascertaining precisely what the situation was as regards need for stream improvement, as effected by the effluent from pulp and paper mills, and the desirability of the utmost harmonious cooperation between the industry and the state officials involved.

Proposed legislation providing for scientific investigation and the development of economical and practical methols of waste disposal to prevent stream pollution, as outlned in the Browne Bill H. R. 8561—was also discussed by Mr. Baker. This matter was subsequently gone into further with officials of the U. S. Forest ervice, with the thought that it might be possible to tie this up with the McSweney-McNary Bill, and thus obtain the necessary appropriations and the direct cooperation of the Forest Service, while at the same time, eliminating the objectionable and unnecessary focus of attention by the public on the pulp and paper industry in connection with its mill effluent, which would result from the Browne Bill.

Finds for Continental Bag & Paper Corp.

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 8, 1928.—C. E. Simmons, an Examiner of the Interstate Commerce Commission, has prepared a proposed report for the Commission in the case of the Continental Bag and Paper Mills Corporation against the Atlantic City Railroad company. The examiner found that the rate charged on paper bags, in carloads, and on paper bags and wrapping paper in mixed carloads is applicable but unreasonable. Reparation is awarded and a reasonable rate prescribed for the future.

Longview Fibre Co. Ships East

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., February 3, 1928.—The Longview Fibre Company loaded 330 tons of fiber board on the steamer Lewis Luckenbach the lasts week in January for Boston and Philadelphia consignment. This plant since it started operations in October has been turning out regular shipments of their product.

More News Print Mergers Rumored in Canada

Complete Consolidation of Organizations Operating in St. Maurice Valley District Foreshadowed —Negotiations Afoot For Bringing Wayagamack and Port Alfred Interests Into Line— Wayagamack Pulp & Paper Co. May Absorb Dryden Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., February 6, 1928.—Still more news print mergers are coming shortly if rumor is true. For the moment events seem to be moving toward a complete consolidation of all the companies operating in the St. Maurice Valley, the center of the news print industry in the Province of Quebec. In this connection it is said that negotiations are afoot for bringing the Wayagamack Pulp and Paper Company and the Port Alfred Company into line, it being agreed that a tremendous saving in logging operations might be effected if these companies were to become a part of the Canada Power and Paper Company, as the new St. Maurice-Laurentide merger company is called.

Another rumor has it that the Wayagamack company will absorb the Dryden Paper Company, of Dryden, Ont. The latter company is now being operated under a receivership, whereas the Wayagamack company is in a strong position. The present market value of Wayagamack's shares places a value on the stock outstanding of some $12,000,000 as against $5,000,000, the figure at which the shares are carried on the books. The company recently sold limits in Gaspe to the International Paper Company for $1,300,000—a factor which again strengthens Wayagamack's position.

The reason for the rumor that Wayagamack may secure Dryden is the fact that both companies produce sulphate pulp and kraft paper. While Wayagamack, through its wholly owned subsidiary, Wayagamack News, produces 160 tons of news print daily, yet its kraft pulp and paper production is still the dominant end of the business.

One argument in favor of bringing together these two mills consists in the strategic location of Dryden to handle western orders, thus eliminating heavy freight charges on Western shipments made at Wayagamack's plant at Three Rivers.

While nothing may come of these suggested further mergers in the industry, yet the persistency of the rumors probably indicates that negotiations along some of the foregoing lines have at least been started.

Bathurst Company to Expand

It is officially announced that plans are under way for further developments and extensions to the plant of the Bathurst Lumber Company, of Bathurst, N. B. This company was recently acquired by the Canadian Power and Paper Investments, Ltd., in a deal involving $10,500,000. The proposal is to install an additional news print mill this year, and probably develop an additional 5,000 or 10,000 h.p. The property includes a news print mill, sulphate and sulphite pulp mills, timber estimated to contain 20,000,000 cords of pulp wood and a 10,000,000 h.p. hydro-electric development, and undeveloped powers capable of developing an additional 50,000 h.p.

Stetson-Cutler Changes Name

Stetson, Cutler & Co., Ltd. (the wholly owned subsidiary of Fraser Company, Ltd.), has obtained supplementary letters patent changing its name to that of Restigouche Company, Ltd. There is no change in the issued capital stock which is 250,000 shares of no par value common but new financing is to be undertaken shortly.

The company holds under lease from the Province of Quebec 286 square miles of timber lands on the watershed of the Restigouche River; and under lease from the Province of New Brunswick 539 square miles on the Restigouche, 137 square miles on the Green River, and 333 square miles on the Tobique River (both the latter being tributary to the St. John River), a total area of 1,295½ square miles, estimated to contain about 7,000,000 cords of pulp wood

The company also owns a sawmill property at Athol, near Campbellton, N. B., with an annual capacity of 30,000,000 feet b.m. lumber and 25,000,000 laths.

The directors of the company are identical with those of the Fraser Company.

Huge Water Power Projects

By far the largest project for the develoment of hydro-electric energy yet put forward in Canada has been submitted to the Dominion government and the Government of Quebec by a syndicate in which Frank P. Jones, former president of the Canada Cement Company is one of the leading figures. The project is sponsored by the Beauharnois Light, Heat and Power Company, of which R. O. Sweezey is president. The project is to utilize the whole flow of the St. Lawrence River in the drop which that river takes of 83 feet from Lake St. Francis to Lake St. Louis, a few miles west of Montreal. It is estimated that 2,000,000 h.p. could be developed here. A feature of the proposal is to divert the flow of water from the present bed of the St. Lawrence into a canal to be built through what is now farming land. The canal would be 13 miles long, 27 feet deep, and no less than half a mile wide. It would form an important link in the proposed St. Lawrence deep waterway from Montreal to the Great Lakes, and the proposal is to provide this canal and present it as a free gift to the country in return for permission to develop the power. The reason why the canal would be so wide is that in a narrow canal the flow would be too large to allow ships to be kept in control.

At first only 500,000 h.p. will be developed, and that remaining will come into use as the situation demands.

This enormous undertaking will cost in its initial stages about $65,000,000, fifteen millions of which represents the cost of making the channel satisfactory for navigation. Other estimates indicate a cost of $200,000,000 for the completed enterprise. The cost of power developed by the first unit will be about $11.50 per horse power, while subsequent cost will be reduced to $9 per horse power. When only 500,000 h.p. is developed, two canals, paralleling one another will be operated. But as more power is developed, the land in between will be dredged out.

Mr. Jones is now in England and is understood to have completed provisional contracts with English concerns to establish industrial plants here that would utilize practically all the initial 500,000 h.p. proposed to be developed.

Meanwhile a contract has been awarded this week for a power development on the Back River which flows along the north shore of the Island of Montreal. The undertaking, which will cost in the neighborhood of $8,000,000, will develop 65,000 h.p. under a 26-foot head. It is being carried out by the Montreal Light, Heat and Power Company which is closely allied with the Shawinigan interests.

Illinois Envelope Co. Has Good Year

KALAMAZOO, Mich., February 6, 1928—The past year has been a very good one for the Illinois Envelope Company, according to reports issued at the annual meeting. The plant has operated at capacity the major portion of the 12 mounths' period.

W. B. Milham, V. T. Barker, M. S. McKinstry, C. A. Fox, O. A. Milham, Charles Clarage and Abe. Van Bochove were re-elected directors. The officers are: W. B. Milham, president; V. T. Barker, vice president; secretary-treasurer and general manager, M. S. McKinstry.

Paper Trade Outlook Brighter in Philadelphia

Book Papers and Other Grades of Printers' and Publishers' Supplies in Better Request—Demand for Cover Papers and Writing Papers Also Fairly Active—Wrapping Paper Moving in Excellent Volume—Paper Stock Still Rather Spotty

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., February 6, 1928—Opening days of the new month brought a brighter aspect to the paper industry in so far as the course of business was concerned. Demand for book papers and other grades of printers and publishers supplies increased. While there were no broadly scattered evidences of a boom, a considerable volume of paper was sold under contract. The larger orders were for book papers. Covers and writing grades were also fairly active.

A spreading demand for course papers was noted, with a specially active market for wrappings. Keener competitive bidding for orders has been responsible for inroads upon the prices of krafts and many coarse paper specialties. In order to clean out old stocks that were held over from inventory local distributors are quoting below mill values. The mills are securing sufficient business to warrant steadier prices, but local dealers are not listing their wares along the same steady trend that manufacturers have followed. Tissues are weak and appear to be the only unsteady commodity among the locally manufactured paper products. The mills have been offering tissues as low as 60 cents per ream. This applies to manila tissues, No. 2 white, and grades made of sulphite pulp.

Activity in the Pennsylvania mills has slightly increased, orders are fairly good, warranting continued production at present levels for the entire run of February. Though operating below capacity, the mills are still holding fairly well to the 1026 levels of production.

Though many of the commoner grades continue active, the paper stock market has taken a spotty turn. A few of the higher priced raw materials have been in demand but orders are lower than the normal seasonal requirements. Rags are lagging, along with the higher priced paper stocks. Roofing materials are among the active grades in the rag stocks.

Testimonial Banquet for Morgan H. Thomas

Employes of the Garrett-Buchanan Company joined in the testimonial dinner tendered the newly elected president of the company, Morgan H. Thomas, held at the Rittenhouse Hotel, on Thursday evening February 3. Testifying to the amity and good will existing between executives and employees, two hundred members of the staff joined in the extension of the compliments of the workers to the chief officers of the concern around the banquet board, in the many diversions furnished in the entertainment program and with the informal talks that were interspersed throughout the dining hour. With the introductory message of Vice President and General Manager Edward H. Keller, the association of the newly elected president of the company as successor to the late John H. Sinex was outlined from the early days when he joined the concern in the accounting department through the various steps of his rise to chief of the executive staff and finally the presidency of the firm, one of the largest in this section of the country. The harmony existing between Mr. Thomas and his staff of workers throughout the many years of his connection with the company, his achievements in the civic, fraternal, religious and business life of the community, were outlined by Vice President Keller as he extended to the head of the company the good wishes of his co-workers, many of whom have become co-operative share holders under the recent reorganization that followed the death of Mr. Sinex.

As toast master and chairman of the committee that arranged the testimonial, Mr. Keller introduced President Thomas who gave expression to his appreciation of the practical evidence of their good will and the consideration which prompted the evening's testimony of hearty accord with his administration of the company's business. He thanked the workers for the past cooperation and pleaded for the continued interest of his associates in promoting the welfare of the firm. Then Joseph S. Weaver was called on as emissary from the staff of employees and executives in presenting a handsome leather, gold monogramed golf bag as a memento of the loyalty and fealty of the associates to the new head of the firm.

Those who served on the committee of arrangements were Joseph S. Weaver, vice president and manager of the wrapping paper department and Harold Wollaver, assistant treasurer and auditor of the company and the Ladies who presided as hostesses —Misses Tess Seese and Nellie Mureanel. Following the dinner there was a program of music and songs winding up the late evening with a dance accompanied by a modern orchestra. Announcement was made of other get-together functions which will become annual events in the business family of the Garrett-Buchanan Company throughout the coming years.

Paper Mfg. Co. Entertains

Following its annual dinner and social session with its Philadelphia distributors, held in early January, the District of Columbia Paper Manufacturing Company gave further evidence of its interest and co-operation with the trade by an educational tour of its mills for the Quaker City dealers. The local distributors and several sales representatives journeyed from Philadelphia on January 23 to join in the hospitality which the mill officials extended the following day. On January 24 they were escorted to the mills by the president of the Company, G. L. Nicholson and Sales Manager W. W. Langtry. From the preparation of the raw materials through the beater rooms, and other departments of the mills, the dealers were shown the details of paper making carried out by the concern in the manufacture of its line of fine papers and specialties in blottings, box covers, and index bristols. These steps of manufacture had previously been outlined in the meeting held in January at the Benjamin Franklin Hotel.

With the tour of the mills completed in the early afternoon the group of local paper men were guests of the company at the luncheon served in the mills and then were taken for a sight seeing tour of Washington under direct escort of the mill officials. Those from the Philadelphia trade who were present were: Lindsay Paper Company, H. C. Henzel, J. A. McIntire, and David Lindsay Evans; Raymond and McNutt Company, Frank Berry, Milton K. Christine, C. Garrett, R. W. Christy, D. Grillet, and L. S. Bishop; Whiting Patterson Company, Inc., J. G. Hamilton, W. R. Armacost, A. F. Haise and G. H. Beatty and Wilcox, and Walter Furlong Company, T. S. Furlong and L. S. Megargee.

Smythe Appointed Delegate To National Meeting

At the meeting of the Wrapping Paper Division of the Philadelphia Paper Trade Association held last Wednesday at the Bourse Restaurant, the election of T. H. B. Smythe of J. L. N. Smythe Co., as delegate to the National Convention was effected. Mr. Smythe, who last year was elected vice president of the association, will represent the wrapping paper section of the local organization.

Paper Men To Join in Typothetae Frolic

In the combined banquet and frolic of paper men and allied associates in the graphic arts industries to be held on February 14, there will be a colorful entertainment provided. The 1928 Graphic Arts Frolic is to be a piratical affair, with Captain Kidd

and his merry associates joining in the entertainment and banquet at the Penn Athletic Club. The guests from the trade and its allied industries will all be costumed in the romantic garb of the days when the buccaneers roamed the high seas, while the fair sex will be matched in the jaunty and colorful costumes of lady pirates. Plans for the entertainment and dinner have been completed for the combined Valentine Day festivities and yearly fellowship gathering of the trades.

Scott Paper Co. Makes Record Shipment

A record shipment of Scott Tissues was made by the manufacturers of toilet and tissue papers from the Chester plant of the Scott Paper Company in late January to the Middle West. The three railroads covering the middle western distribution centers over which shipments of the paper were made were the Reading, Western Maryland, and Chesapeake and Ohio. According to the railroad officials this shipment, which required 25 cars, established a new record for this class of freight.

Paper House Supplies Door Prizes

Door Prizes for the bi-monthly meeting of the Typothetae of Philadelphia were supplied by W. W. Seary of the D. L. Ward Company when the combined session of paper men and printers was held on January 31. The meeting of the paper-printer trades was addressed by Julius Weyl, of the Typothetae, during the noon hour when the joint session was held in the Public Ledger Club Rooms on the 11th floor of the Public Ledger Building, where the seasonal gatherings have been featured this winter.

Philadelphia Quartz Company Appointments

Following established custom, the members and staff of the Philadelphia Quartz Company gathered at the Down Town Club, Philadelphia, on Tuesday evening, January 24, for their annual "get-together" and dinner. More than 100 people attended, including Carl F. Wolcott, W. H. Buxton, Jr., H. M. Fricke, H. K. Steptoe, F. R. MacGonagle, F. Homer Bell, J. R. Jones and . W. Wichterman, field representatives; W. Smith, R. S. Pilkington, J. H. Biddle, J. Barker, J. W. Walker, R. Farmer, works superintendents.

An announcement was made by William T. Elkinton, president, of the appointment of J. Passmore Elkinton as sales director, Edwin A. Russell as sales manager, and Carl F. Wolcott as field assistant sales manager.

News of the Pacific Northwest

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., February 3, 1928.—Miss Elizabeth Leadbetter, daughter of Mr. and Mrs. Frederick W. Leadbetter of Park avenue, Portland, Ore., was married in January to Martin Cronin, Jr. The wedding was an elaborate home affair at the home of the bride, who was given in marriage by her father. She was attended by her sister, Miss Dorothy Leadbetter. F. W. Leadbetter is one of the largest owners of paper and pulp properties in the west, his principal mills and organizations including the Columbia River Paper Mills at Vancouver, Washington; The Oregon Pulp and Paper Company, Salem; California-Oregon Mills in Los Angeles, and Vancouver Kraft Mills at Port Mellon, B. C.

Herman Sherrei has been appointed assistant superintendent at the Hawley Pulp & Paper Company's plant at Oregon City, Ore., of which George Pusey is superintendent. Mr. Sherrei was formerly with the mills of the Leadbetter organizations.

Portland Fibreboard Products, Inc., now has offices at 210 Henry Building, Portland, Ore.

The Oregon Pulp and Paper Company has moved its San Francisco headquarters into the new Russ Building in that city. The plant of this company is located in Salem, Ore.

J. P. V. Fagan, formerly sulphite superintendent at the West Linn plant of the Crown-Willamette Company, is now serving in that capacity at Camas, Wash., in the mill of the company in that place. He succeeds S. A. Salmonson who has been transferred to West Linn to Mr. Fagan's former position.

Further Improvements at Rhinelander

RHINELANDER, Wis., February 6, 1928.—Contracts have been awarded covering an extensive program of expansion for the Rhinelander Paper Company, it was announced last week by William Eibel, manager of the company.

Work approved by the company officials includes: Construction and installation of a new paper machine; a complete new power house; glassine finishing room. Construction began February 1.

The Beloit Iron Works of Beloit, Wis., will build the new paper machine. This machine is especially designed for the manufacture of glassine and greaseproof and will possess all of the latest improvements for a machine making glassine and greaseproof. The mill now has a production of 20 tons of glassine and greaseproof papers, and when the new unit is in operation the output will be approximately 35 tons daily. This machine will be in operation late in September.

Contract for the new boilers has been awarded to the Babcock & Wilcox Company, and contract for the stokers has been awarded to the American Engineering Company, of Philadelphia. The program calls for two 834 h.p. Stirling boilers, with room in the new boiler house for additional units.

The contract for the new glassine finishing room has been awarded to C. R. Meyer & Sons Company, of Oshkosh, Wis. The plans call for a two-story 85x96 feet steel, brick and concrete building. Work has already been started on this.

This new work comes on the heels of the heavy program of expansion inaugurated in 1927. Last year's activities included the installation of a high density bleaching system, a water filtration plant, added beating equipment, refrigerating plant, new acid recovery system and other important improvements.

All of this work will be under the direct supervision of Folke Becker, general superintendent, who is considered one of the leading authorities on glassine and greaseproof in the country. The engineering work is being handled directly by the mill engineering organization under G. H. Suhs.

To Design Wrappers for Sisalkraft

So many widely varying uses have been found for a new product, Fibreen, in the wrapping of shipments of all kinds that the Sisalkraft Company, Chicago, has retained the Don L. Quinn Company to design and test various wrappers proposed for shipping manufactured products protected by this new material. Mr. Quinn is well known in the shipping container field, as he was one of the pioneer engineers to take up the work of designing and testing packing cases and wrappings of all kinds.

When the department of commerce under Secretary Hoover's conservation policy undertook the formulation of definite rules for packing, Mr. Quinn was called in to help. His long, practical experience was exceedingly valuable to the government, and the commerce department's handbook, "Packing for Foreign Markets," contains much of his work.

In his present laboratories Mr. Quinn has installed probably the most complete array of testing apparatus found in a commercial laboratory. Machines of many kinds are found in the Quinn laboratories, but the most striking one is a large revolving drum. Boxes and bundles under test are placed in this drum and are bounced and dropped against various obstructions in the drum. In this way they receive all the shocks and strains ordinarily received in shipping, and a definite opinion of the container's efficiency can be made.

As requests are received, the Sisalkraft Company submits full information to the Quinn laboratories, and a proper wrapping is designed. Several of these are then made up and are used for testing ability to withstand water and moisture, tearing, pounding, friction, and other factors met in shipping. Sometimes the testing reveals weak spots, which are then eliminated in a new design. By continuing this process officials of the Sisalkraft Company report they can give shippers information as to savings possible through use of Fibreen wrappers in a minimum of time.

Paper Business Generally Steady in Boston

Orders Placed Continue in Practically the Same Volume Which Has Prevailed During the Past Few Weeks—Box Board Market Remains Firm Despite the Effect of the Recent Inventory Period and Manufacturers Are Reported to be Mostly Optimistic

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., February 6, 1928—Paper business as a whole is good. An almost unanimous report is that the market is steady, with orders placed in about the same volume as for a few weeks. It is stated that with the easing off of sulphite pulp, the price of sulphite papers may be lower, but that development has not taken place yet. A slight decline in tag stock has affected the price tags. It is said that the only weakness in the paper market is in Southern kraft, a development which has been previously noted in these columns. The bag market is weak, with price-cutting conditions rather disturbing. The demand for butchers' wrapping paper, fibre paper and No. 1 and 2 grades of tissue is strong.

The box board market is sailing along on an even keel, with no boom. Some are surprised that box board was as steady as it was during January, considering the inventory-taking which usually has an adverse effect around the first of the year. Although somewhat spotty in certain quarters, the trade by and large is optimistic. Business is improving among the shoe box manufacturers, resulting in an increased volume of orders for board for their purposes.

In contradistinction to the paper market, the paper stock is not good, generally, according to statements in the trade, although there is more demand for specialties, like books. No. 1 grade of books, heavy, is quotable at 1.45 to 1.60, compared with a previous range of 1.35 to 1.45. December was "not a bad month", but January was a disappointment. Mixed papers have not declined any further, however, and the No. 1 grade remains at .50. Quotations on bagging, new and old domestic rags, and foreign rags are practically unchanged.

The twine market has been steady for the last few months, with scarcely any fluctuations. Some of the fibres have declined, but not enough to cause a reduction in manufactured goods. Manila fibre has been lower since January 1. A few new sizes have been introduced in jute wrapping twine.

News of the Trade

In conjunction with the business practice survey which is being mailed to the printing trade Carter Rice & Co. Corp. is planning a series of meetings of their salesmen, staging sales demonstrations. For these demonstrations a salesman gives considerable time in the preparation of a sales talk which he gives to another who takes the part of buyer, showing how to handle the situation in actual selling.

The American Writing Paper Vompany, Inc., is issuing a series of six mailing packets of Eagle-A Papers, containing ideas and suggestions for direct mail advertising and showing layouts and color combinations. These are intended for the salesman to show to his customers in the paper and printing industries. They are issued bi-monthly. No. 1 appearing in January. The same company is sending out Eagle-A Mardi Gras Paper, an unusual product, in which actual pieces of confetti are a part. A folder contains colorful illustrations, breathing the "spirit of gaiety, entertainment, carnival, garden parties and the like". Another folder is the Eagle-A Herculean Cover, demonstrating some of the fifteen colors used on this paper. Samples of American English, Acceptance Bond, American Vellum, Eagle-A Coupon Bond, Eagle-A Chester, and Riverdale Cover are also being issued.

The January-February issue of John Carter's Paper, a house organ published in collaboration with Charles H. Barr Associates and printed on Wheelwright's B. P. F., contains much information of interest to the trade.

The Old Colony Envelope Company, Westfield, Mass., has announced a reduction in prices on Canterbury Laid De Luxe Mailing Pieces.

A delegation from several Boston paper houses attended the funeral of L. F. Peck in Holyoke, Mass., Wednesday, February 1. Mr. Peck died of pneumonia, January 30, at his residence in that city in his 52d year. He was the representative of the American Writing Paper Company, Inc., and was highly thought of in the trade.

L. P. Winchenbaugh, general paper merchant, who has been ill for nine weeks, is closing up the business of the Lesster P. Winchenbaugh Company. Mr. Winchenbaugh is slowly improving at his residence in Hyde Park, Mass.

Charles W. Fields, vice-president of the Baird & Bartlett Company, who underwent an operation at Phillips House on the Massachusetts General Hospital, in that city, January 17, returned to his residence at Mattapan, Friday, February 3, and is convalescent.

Charle W. Morrison, manager of the board sales department of Robert Gair Company, who underwent an operation January 7 at the Gale Hospital, Haverhill, Mass., is doing well.

W. R. Ingersoll, representing the Dill & Collins Company, Philadelphia, called on the trade last week.

Paper Salesman's Good Work During Recent Floods

BOSTON, Mass., February 6, 1928—A recent issue of John Carter's Paper, published by John Carter & Co., Inc., in collaboration with Charles H. Barr Associates, contains the following under the caption of "A John Carter Man Carried 'The Message to Garcia'":

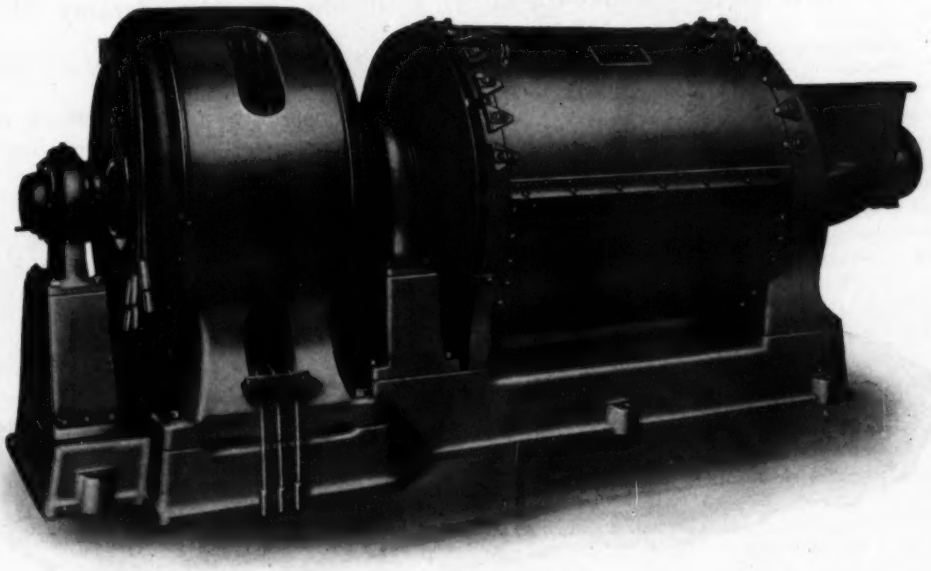
"In a letter from a customer in the Vermont flooded district commending us for efforts made to render service during their time of distress and trouble, he referred to our J-C Man as showing the 'good, old New England endurance' and added that he had exemplified the ideal of Elbert Hubbard's classic, 'The Message to Garcia.'

"We may be pardoned if we relate here the efforts this J-C-Man, a native Vermonter, made to serve his customers following the disaster. Trapped in a Northern New Hampshire town, forced to leave his car and tramp many weary miles to reach transportation for his home, he later returned, secured his car and loading it with paper suitable for the emergency set out before daylight for the Barre-Montpelier district.

"Over roads called impassable, detouring through pastures, and over mountainous trails made passable by the use of small trees intended for Christmas somewhere, this J-C-Man reached the twin cities at the time when ruin seemed complete. Securing a highway pass, he brought back to Boston a load of roller cores for recasting. With the rollers and more paper, all the sturdy Nash could carry, the return was made.

"Once more many cylinder roller cores were taken on and placed with Wild & Stevens and Globe Roller Company who performed emergency service. While these were being made a heavy load of paper was taken to Rutland and other customers were seen as far north as Burlington. With the completed rollers a third trip was made to Montpelier. Customers had now found what their immediate requirements were, they were able to secure a permit to ship through the embargo when the M. & W. R. Railway resumed service, and so, with an auto that never failed in a terrible test, this J-C-Man 'carried the message to Garcia.'"

As good for pulp as the Bird Screen is for paper



Eight thousand tons of pulp pass through BIRD PULP SCREENS every day

BIRD MACHINERY

1395

BIRD MACHINE COMPANY

South Walpole : : Massachusetts

Demand for Paper Continues Spotty in Chicago

News Print Request Is Satisfactory While Interest in Book Paper Market Shows Signs of Reviving—Fine Paper Business Still Below Normal But Distributors are Generally Optimistic Over Future Outlook—Mill Reports Vary Considerably

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., February 6, 1928—Chicago paper merchants are still watching for the upward trend in business conditions that has been so long expected and indicated by various trade barometers. At the present time news is making satisfactory progress while there seems to be a somewhat revived interest in the book market. Demand in the fine paper business has not picked up appreciably according to reports received today but the general tone of all lines is steady and continues to be optimistic regarding coming business conditions.

There is very little if any activity among the various associations that comprise the co-operative efforts of Chicago paper merchants. Every eye seems to be turned on the coming meetings of the National Paper Trade Association, American Pulp and Paper Association and affiliated lines and the meetings of the Salesmens Association of the Paper Industry in New York.

A noteworthy characteristic in the paper field at present is the effort being put forth to get business and a fair battle is being waged to get what there is on hand. Mill representatives have varied reports to make. Some mills are said to be filled to an overflow while others are waiting and working for orders. The year 1928 looks to be one in which sound business principles and selling efforts will win out. At the present time little improvement is reported over last year at this period.

There seems to be an increased activity in direct mail advertising during the past month if reports from the office of Postmaster Arthur C. Lueder are to be taken into consideration. According to a report submitted on Thursday by Auditor C. C. Lohman to Mr. Lueder the receipts of the Chicago post office for January were $5,372,553.60 an increase of $227,073.54 or 4.41 per cent over the same month in 1927.

New Martin Cantine Agents

The Martin Cantine Company, Saugerties, N. Y., manufacturers of coated papers, recently announced the choice of the Felsenheld & Daniels Paper Company, Wrigley Building, Chicago, to handle their line of Cantine paper in Chicago and outlying districts. Felsenheld & Daniels succeed the Forsythe Paper Company who have represented the Martin Cantine Company in this territory for a number of years. It is reported that a new sales policy adopted by the Martin Cantine Company eliminates the need of mill agents, thus bringing about the appointment of Felsenheld & Daniels.

Co-operative Marketing Plan

Paper dealers in Chicago are looking forward with a great deal of anticipation to the plan of the Marketing Committee of the National Paper Trade Association and its resultant final adoption at the coming meeting in New York. Paper merchants here are aware of the fact that the paper industry, one of the leading industries of the nation, is perhaps the only one that has yet failed to sell its entire industry through an appeal to users of the product of that industry the nation over. It seems to be the universal opinion in Chicago that paper, in its present position, merits the added value of a well planned and equally as well carried out marketing plan. So big is the Marketing Plan as outlined by James Smith, Chairman of the Marketing Committee, that it should pass the bounds of the National Paper Trade Association and take in all lines and angles of the paper industry so that all may benefit by concentrated appeal. As planned, the marketing principle is absolutely sound, is backed by skilled men in the industry and one wonders why it has not already been carried through to final adoption.

Paper Training Course Nearly Ready

The training course of the Paper Trade Institute, Chicago, on the manufacture, use and sale of paper is now on the press and will be ready for distribution in the near future. The course planned by the Great Lakes Paper Company of this city, consists of ten compact, well illustrated books of a practical nature intended to acquaint those who wish to know, with every phase of the paper industry. Subscribers to the course also receive a set of large, actual size samples of practically every paper and twine mentioned.

News of the Trade

A somewhat novel feature is being carried out by the Schwarz Paper Company of this city, who have recently secured Clyde F. Driesbach as a sales director, with full control over a force of forty salesmen. Mr. Driesbach has no inside work to bother with, but is given the duty of working with the salesmen on the road and in their territories, spending all his time with the men working with him.

Mr. Driesbach has had a great deal of experience in the paper field, having been connected with Fisher Brothers at Fort Wayne, Indiana, for over twenty years, according to reports.

The West Virginia Pulp and Paper Company is featuring the practicability and attractiveness of three grades of Westvaco to the trade this week. The three are Velvo-Enamel, Westvaco Post Card and Westmont Enamel. The three samples are sent out with printed matter covering only a small space, the remainder being a splendid sample of the texture and appearance of the paper described.

H. H. Brookins, formerly with the Whitaker Paper Company, Chicago, is now connected with the Minneapolis Paper Company, Minneapolis, Minnesota.

J. T. Hillyer, manager of the Whitaker Paper Company, Chicago house, with a party of friends, plans to visit the mills in Miami Valley the first part of the week. Miami Valley is the center of a large number of mills between Dayton and Cincinnati making about every kind of paper with the exception of news print, turning out a combined output of 1800 tons every 24 hours.

George S. Johnston, Western Newspaper Union, Omaha, visited in Chicago two days this week. Everett Pratt, president of the Pratt Paper Company, Des Moines, Iowa and R. V. McCollum of the same company were through Chicago last week also on their way to visit the mills in Miami Valley.

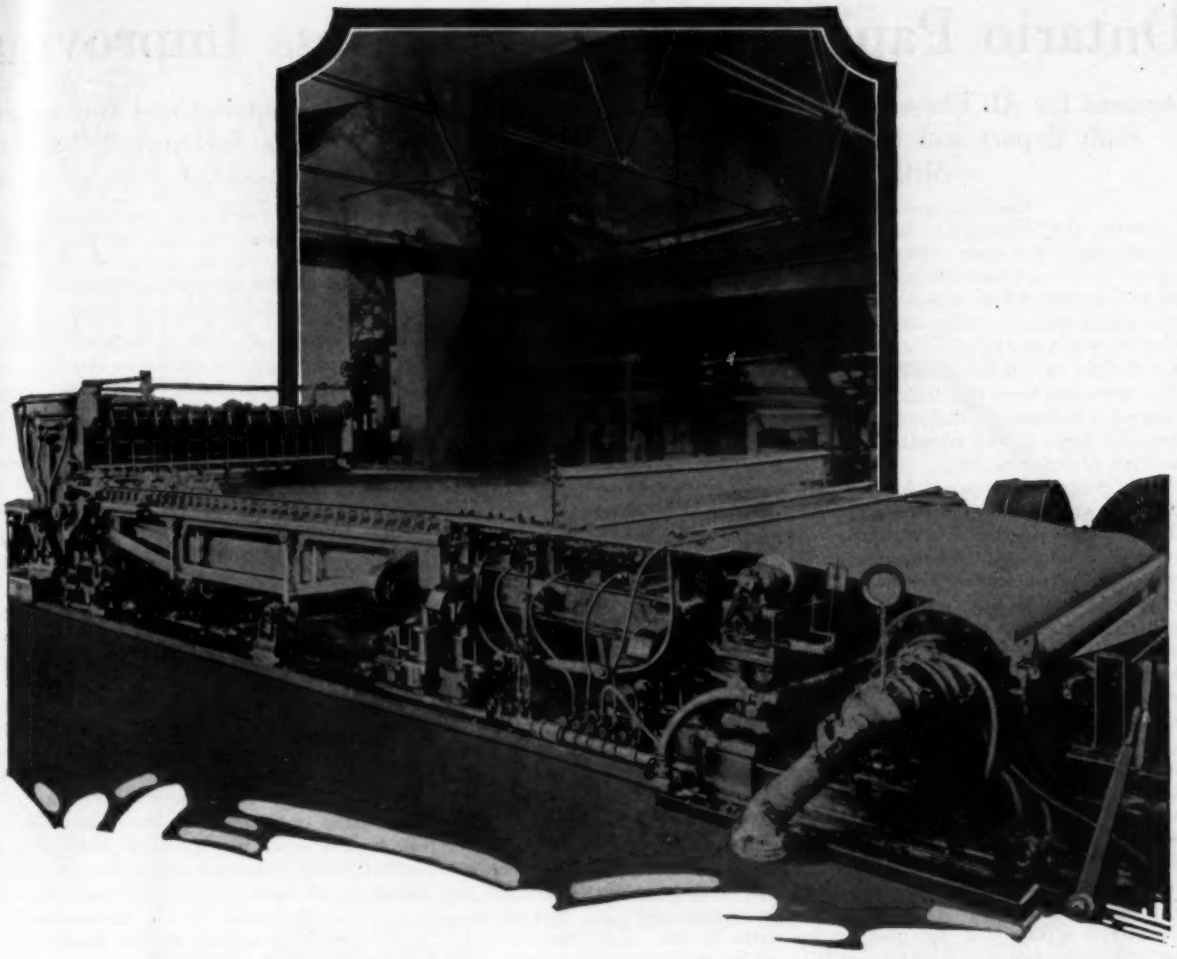
W. D. Randall, general manager of the Champion Coated Paper Company visited in New York two days of last week.

James Hood, Western representative of the A. M. Collins Manufacturing Company is in Philadelphia this week.

George Johnson, of the Great Western Paper Company, Ladysmith, Wisconsin and H. J. Corlin, representing the Miami Valley Coated Paper Company, Franklin, Ohio, visited in Chicago this week.

Paper Production Number for December

WASHINGTON, D. C., February 8, 1928—Paper production index number for December was 104 compared with 102 for November and 119 for December, 1926, taking 1919 at 100 per cent according to the Department of Commerce. The monthly average for 1926 was 122 and for last year it was 108.



Old Equipment cannot meet present day Requirements

Mills struggling along under the handicap of antiquated equipment are "penny wise and pound foolish." It is said that "a good workman never complains about his tools," but it is apparent that a good machine tender cannot make money for you if he is troubled with maintenance, petty adjustments, broke, etc. Avoidable losses nullify profits.

The illustration shows the new Wet End of a book paper machine at the Jessup & Moore Paper Co., Wilmington, Del. This Keystone Removable, Adjustable, Shakeable Fourdrinier Part is used with the driers and finishing equipment of a machine, which has been operating many years.

It is good business to spend money to save money. Why not put your machine room on an efficient operating basis, by letting us rebuild your machines, whether Fourdrinier or Cylinder?

Our Products Meet Our Promises

KEYSTONE Fourdrinier

Downingtown Mfg Co. Downingtown Pa.

Ontario Paper and Pulp Business Improving

Demand for All Classes of Fine Papers Continues Excellent—Mills Report Good Business in Both Export and Domestic Departments—Book and Writing Mills Particularly Busy —Mills Manufacturing Light Weight Papers Are More Active

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., February 6, 1928.—Both in wholesale and manufacturing pulp and paper circles in Ontario business is gaining impetus as the new year advances, with the possible exception of the pulp market, which is weak. Both Canadian and American mills would appear to have large stocks of wood on hand, one effect of which is that the Canadian pulp and paper companies have decided on a policy of restricted output this season; in fact some companies have very materially curtailed their camp operations, while a number of the pulp manufacturing companies in the Dominion have ceased manufacturing until prices warrant resumption of activities.

Paper producing companies, however, are busy—particularly the book and writing mills, most of which are operating at capacity. There is a good demand for all classes of fine papers and mills report good business in both the export and domestic departments, while domestic wholesalers are placing orders for good tonnages. Despite the fact that the jobbing trade report more or less of a hand to mouth buying tendency on the part of their customers, there is a noticeable trend among the wholesalers to put in stocks, and ton and carload lots are gradually replacing the small lot buying that has prevailed for some time. Demand, also, is well spread over practically all paper lines.

Mills manufacturing light weight papers are doing an excellent business in tissues, crepes, toilets and specialty lines and the paper converting trade generally is getting more active. There is, however, a good deal of competition to meet in these lines, as there has been for months past. Complaint is heard, also, that tissues are being sold in Toronto at 400 count instead of by the full ream of 480 sheets. This opens the door to unscrupulous methods of selling, so far as the foreign tissues are concerned. It is held that a ream is a ream and not five-sixths of one. It is contrary to the policy of Canadian mills to put up short counts, and they feel that they ought not to be handicapped by reason of their adherence to the obviously proper course. It is likely that the matter may be brought to the attention of the Dominion Government.

Paper Converters More Active

The paper converting trade is beginning to get more active again after a somewhat quiet period and a good spring trade is looked for. For instance, envelope manufacturers are recovering from the slack period following the Christmas trade and manufacturing stationers are quite active. In the coarse paper market there is a good call for kraft and for wrapping and bags generally, with large individual order placing as contrasted with the small quantity buying which marked the opening of the year. The paper box branch of the paper industry is decidedly active, which means large consumption of board. Most of the box board mills are operating to about eighty per cent of capacity and prices continue firm with some talk of an upward revision in the more or less near future. Board prices have not been revised for upwards of a year—much to the satisfaction of the paper box manufacturers—and the mills and those handling the product are beginning to talk of revisions this coming spring. In the meantime, the output of the board mills is being readily absorbed, and in some cases deliveries are delayed owing to press of orders. Mills manufacturing glassine and grease proof lines report a well sustained demand for their products.

Rag and paper stock dealers report an excellent demand for both lines of stock by the paper mills, with a volume considerably ahead of the corresponding period of last year. Supplies are abundant and dealers have no difficulty in disposing of all the old paper and rags they can procure through collection agencies. The year has started off well in the rag and paper market and the prospects are for a firm market for some time to come.

Province Claims Damages

E. W. Backus, pulp and paper magnate, accompanied by A. D. George, solicitor, Fort Frances, were in conference this week with the Ontario Minister of Lands and Forests in Toronto, with a view to settlement of claims made by the department against Mr. Backus as a result of the flooding of valuable timber lands in the Rainy River area, and also the burning of timber in connection with the establishment of a dam on the Seine River. The Minister reported some headway with the negotiations, which were not completed, however. A considerable sum is involved in the claims.

More to Be Spent on Reforestation

Forecasts of legislation providing for greater expenditures in the Government's program of reforestation and more stringent restrictions governing the cutting of timber and pulp wood, was contained in a public speech delivered in Toronto this week by the Minister of Lands and Forests. The forests, he said, meant an annual wealth of $120,000,000—a resource second only to agriculture in Ontario. The last century had seen an appaling loss of forest wealth to the province, and at the present rate of consumption the end of the white pine resources would be reached in fifty years. He explained the Government's policy of encouraging farmers and counties in Southern Ontario to use a certain percentage of their land in which to plant trees provided by the Province; the work of the aeroplane fire patron to combat forest fires and the sealing up of lands unsuited for agriculture for forestry purposes. "Timber is just as much a crop as wheat is," he declared. "Timber should be a farm and the mistake in the past has been the treating of it like a mine."

A New Advertising Manager

In keeping with the forward policy of the Canada Paper Company, Ltd., comes the appointment of an advertising manager, F. Homer Zwicker. Mr. Zwicker comes from Halifax where he has been managing director of Nova Scotia Print, Ltd., since 1917. Mr. Zwicker's headquarters for the present will be at the Toronto office of the company, corner Simcoe and Pearl streets.

Brown Heads C. P. T. Association

Jobbers of fine papers from various parts of Canada met in annual convention of the Canadian Paper Trade Association at Montreal last week and in an informal way discussed ways and means of increasing the use and sale of paper. Paper wholesalers from most of the provinces came with an optimistic note to the meeting and testified that the past year had been a good one in the fine paper industry, predicting even better business during the present year. These officers were elected: Honorary President, John F. Ellis, Barber-Ellis Company, Toronto; President, J. B. Brown, T. B. Little Company, Montreal; 1st Vice-President, Fred W. Halls, Fred W. Halls Paper Company, Toronto; 2nd Vice-President, Fred Smith, Smith, Davidson & Wright, Vancouver, B. C.; Honorary Treasurer, J. J. Macabe, Buntin-Reid Company, Toronto; Honorary Secretary, N. L. Martin, Toronto; Secretary, Ivan Moffitt, Toronto. The members made merry at the annual Association dinner at the Windsor Hotel, where Past President A. C. Hunt, of Winnipeg, presided over an attractive program, and many of the members also attended a cabaret dinner

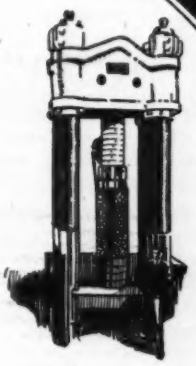
(*Continued on page 38*)

WALDRON Paper Rolls

Their Longer Life means Lower Cost!

The John Waldron Corporation has been making paper rolls for over seventy-five years during which time valuable data and experience has been gathered.

Our Engineering Department will study your particular conditions and will, without obligation to you, submit recommendations that will help you to reduce the cost of your paper rolls by increasing the yardage or the number of operating hours.



One of the huge presses capable of exerting 1500 tons pressure—used in compressing Waldron Paper Rolls.

HAVE YOU AN INSTRUCTION SHEET AS TO HOW A PAPER ROLL SHOULD BE RUN IN? IF YOU WRITE—A COPY WILL BE SENT TO YOU

JOHN WALDRON CORPORATION

MAIN OFFICE AND WORKS NEW BRUNSWICK, N. J.

208 W. Washington St.
CHICAGO

30 East 42nd Street
NEW YORK

Future of Pacific Northwest Paper Industry*

By C. C. Hockley[1]

A talk to a credit group should probably, aside from a statement of the various processes, eliminate the questions of systems and processes and the purpose of this talk is to have a look at the industry as a whole, and in particular that part of the industry using wood fiber and consequently timber. Our interest tonight is in the Northwest and the pulp and paper industries' future here, its present rate of production and consumption and its hopes for the future.

The processes now in use are Groundwood, Sulphite, Sulphate and Soda Process, and I will be glad to answer any questions on these processes after reading the paper. We will, in order to get a proper picture, consider briefly the industry and its history; populations in order to locate our markets; trade areas where we can logically compete; consumption, past and present, with a glimpse into the future; sources of raw material; economics of our situation; and lastly the relation of this industry to the banks and to the Northwest.

Sources of Information

Before entering into the subjects above mentioned, it is but fair for you to know the authorities quoted and sources of information on which our conclusions are based. These sources are: First: Government records, such as Department of Commerce, these figures you must accept. Second: Information from the Technical and Trade Associations, and these figures you will probably accept. Third: Statistics gleaned from the Trade Journals of this and other countries and these you may possibly accept. Fourth: Figures accumulated during my experience of twenty years in the pulp and paper industry as a manufacturer, and these figures I hope you will accept.

History of Paper

Without taking up too much time I would like to look at the history of paper which has developed side by side with education and civilization. During the Stone Age we found that all records were crude pictures scratched on stone or clay and no permanent records developed until the days of the Early Egyptians, say 4,000 to 5,000 years ago.

These records were in two shapes, rolled papyrus which looked like rolls of wall paper and could be read by but few of the citizens; and carvings on the pyramids and obelisks such as those which line the banks of the Nile River. These pyramids, while leaving a fairly permanent record, and ones which could not be borrowed and perhaps lost were rather cumbersome as a library.

This may have had advantages in limiting unnecessary writing. Unlike our modern law makers, Moses was limited to tablets of stone and perhaps, given cheap paper, he might have given us more than Ten Commandments.

Paper from rags was introduced by the Chinese during the Seventh Century and books were not published until about 1600 while newspapers were unknown until the eighteenth century.

Our first paper mill was built at Philadelphia in 1690, and made paper from rags. As late as the year 1810, while we had 200 mills, they made but 3,000 tons of paper per year, of which 500 tons was news print. One Sunday edition of a metropolitan newspaper uses 300 tons of news print. Canada built her first mill in 1880, but the industry did not develop largely there until after 1900.

In fact, wood pulp has been largely developed as a paper source since the days of the Civil War, and in 1869 we find that while the country had 677 mills they used only 2,000 cords of wood during the entire year. So we see that our use and development of wood pulp has been during the last 60 years.

Progress has been phenomenal, and it is a matter of public knowledge that wood pulp in some form is now used for the production of news print, wrapping paper, glassine paper, explosives, roofing, clothing, imitation silks, (Rayon), wall board, carwheels, paints, drinking cups, water pails, bags, films, etc., and in the Northwest is our second industry and is tenth in the United States.

Population Statistics

In 1930 we may estimate the population of our continent as about 140,000,000. This has been a growth in the United States from 38,000,000 in 1870, when our wood-pulp era may be said to have started. It had jumped to 75,000,000 in 1900, when Canada began to contribute pulp, and to 115,000,000 in 1925, when Newfoundland began its larger developments.

Alaska has reached the day of its development, as has British Columbia and our Western States, and this last frontier will by 1930 be contributing paper to our continental population of 140,000,000. To complete the picture of our populations, and therefore our users of paper, we must remember that the world looks to us for its future supply, and while we will have about 140,000,000 population on this continent the whole population will be about 1,750,000,000, and we find that our continent with 8 per cent of the world's population is and will be using over 50 per cent of its production.

While estimates are but guides, at best, it seems logical to assume that the other 92 per cent of the world's population, outside of North America, will later on demand more paper of all kinds than we can supply.

Trade Areas

Our trade area in the Northwest is the territory which is competitive or advantageous as to freight rates and reached by either rail or water from pulp and paper mills in the Northwest. This territory includes our 12 Western States.

To the population of 17,000,000 in 1930, in the twelve States which are the legitimate trade territory of the Northwest, one must add an estimated population of British Columbia and Alaska of 1,000,000, making a total of 18,000,000, and Secretary Hoover in a San Francisco address predicted that the year 1950 would find a population of 30,000,000 west of the Rockies.

The East Coast is reached by a water freight rate which makes it competitive territory, and the Orient offers the Northwest the untouched and undeveloped hordes comprising half of the world's population—all looking to us for future supply.

This population in our Western trade territory (18,000,000) gives us an estimated consumption of 1,500,000 tons of all kinds of paper in 1930, as against a consumption of 1,200,000 tons in 1926.

The West Coast has 78 mills making an annual production of 1,000,000 tons of pulp and 800,000 tons of paper and board. This means that by 1930, without going either to the East Coast or to the Orient, we will be able to sell on the West Coast an additional 700,000 tons of paper per year, or 2,335 tons per day.

In addition, we have still open, as legitimate markets for our products, the Southern and Eastern ports, on at least a competitive basis, and the Orient with favorable freights from the Northwest.

Consumption of Papers

A study of the consumption of papers of different kinds in different sections of our country reveals some interesting conditions such as the fact that news print is consumed in quantities varying with the literacy of the population and by the amount of adver-

* Address given before Robert Morris Associates at Portland, Ore.
[1] Consulting Engineer, Portland, Ore.

WHAT PRICE PER TON?

WHAT DOES IT COST PER TON IN YOUR BEATER ROOM?

Dilts NEW TYPE Beaters on Kraft

A certain mill in the middle west has effected beater power saving of 31.7% per ton of stock after installing Dilts NEW TYPE Beating Engines.*

Other mills using Dilts NEW TYPE Beaters show similar good results.

How can *you* meet competition against those mills if you continue to operate with your old beater equipment? Your cost per ton will be too high.

*See Page 31, *The Paper Trade Journal*, issue of Jan. 26th.

In the year just ended, the sales of Dilts Beating Engines increased 117% over the previous year.

There is no question about the superiority of the Dilts NEW TYPE Beating Engines, and the progressive mills are rapidly installing them.

You should fall in line. "Your paper is made in your beaters." You are vitally interested in reducing your cost per ton.

Among 1927 sales are NEW TYPE beater equipments to the following mills:

The Southern International Paper Co., Backus-Brooks Company, Lincoln Pulp & Paper, Ltd., Tumwater Paper Mills Company, St. Regis Paper Company, West Jersey Paper Manufacturing Company, Howard Smith Paper Mills, Ltd., Grays Harbor Pulp & Paper Company, U. S. Rubber Company, Southern Advance Bag & Paper Company, E. B. Eddy Company, Ltd., National Paper Products Company, Provincial Paper Mills, Ltd., Consolidated Paper Company, United Paperboard Corporation, International Fibre Board Company, Ltd.

Dilts

MACHINE WORKS, Inc. FULTON, N.Y.

EXPORT OFFICE ~15 PARK ROW~ NEW YORK CITY

tising. These conditions give the West Coast a high consumption of news print, per capita, due to the high percentage of English speaking people and our high educational standards.

Wrapping paper varies with the amount of industry. The consumption of roofings and well boards, however, varies with the booms or building conditions and also with the climate, being good insulation.

The people of the United States are the world's best customers at present, and in 1926 our consumption of over 10 million tons of paper products gave us the staggering consumption of 175 pounds per capita, while of news print alone we used 3,500,000 tons in 1926, or about 60 pounds per capita per year, or one pound per family per day.

But these high consumptions of paper are not general throughout the world as we may see by the following figures; for while we, as users of all kinds of paper, consume about 175 pounds per year per capita in the United States, Great Britain uses only about 80 pounds, Germany 45, Russia 5 pounds per capita, and China less than one pound.

Consumption curves show our increases in annual per capita consumption of all kinds of paper from 75 pounds in 1900 to 175 pounds in 1926. An increase in newsprint consumption from 3 pounds per capita in 1880 to 60 pounds in 1926 indicates a growing consumption per capita, and we would surely be conservative if we assumed the present rate of consumption for future estimates.

Production

But what has taken place in the way of production during these mad years of climbing consumption? The United States staggered along until about 1913 with a news print production equalling her consumption and then, with our first realization of wasted forests and scarcity of raw material in the East, Canada came to the rescue and we find that, while the United States' production of news print has increased from 1,300,000 tons in 1913 to only 1,600,000 tons in 1926, Canada's production has increased from 300,000 tons in 1913 to almost 1,900,000 tons in 1926, and the entire production of both countries has practically all been consumed on this continent.

Our continental productions of news print for August, 1927, as reported by the News Print Service Bureau, confirms the figures given above and were as follows: Canada, 180,000 tons; United States, 127,000 tons; Newfoundland, 19,000 tons; and Mexico, 1,300 tons; total, 327,300 tons. You will notice that Canada now (since 1925) produces more news print than U. S. A.

A study of the charts, which show population, per capita consumption, and production, answers some of the questions as to over-production, and we find that our difficulty in the future is going to be to keep up to consumption, without sacrificing our forests. Our final hopes are reforestation, and fire protection—subjects too big to more than mention here.

Raw Material

In speaking of raw material I wish to include, in this analysis, with pulp wood, water for process work and power. All other material used, such as lime, sulphur, salt cake, fuel, etc., are available within reasonable distances of the manufacturing sites.

The following figures taken from Government sources are essential to an understanding of our pulp wood supply: It is estimated that our original stand of merchantable timber was about 5,250 billion board feet in the United States, of which 2,750 billion remains (1,250 billion west of the Rocky Mountains).

In addition to the above merchantable timber figures it is estimated that on the continent we have about 1,750 billion board feet of timber (without using any of the waste from the merchantable timber) suitable for pulp. This would give us about 2,500 million cords, but as much is inaccessible, and as it is an estimate only, we should not use a figure over 2,000 million cords, and a very conservative estimate reduces this amount to as low as 1,000 million cords.

As the United States used in 1926 about 10 million cords, we have an apparent wood supply for 100 years at our present rate of consumption, and without considering increased population, increased per capita consumption, or any new use or export business.

We should not, however, feel that wastes can continue, and should learn a lesson from our experience in the Eastern part of the United States where the one time "boundless forests" have almost disappeared.

A sound reforestation plan is our only safe program. We should avoid two things in our study of the situation: The hysterical statements which indicate a boundless supply of wood and an attitude which would not allow full production to the limit of our ability to consume, and reproduce.

Just a word as to our pulp wood supply in the Northwest, and still leaving out the wastes from merchantable stands: British Columbia had about 42 million cords, Alaska, which may be considered as all pulp wood, about 100 million cords, United States, west of the Rockies, about 500 million cords; Total, 642 million cords.

This supply can take care of our entire continental consumption on our present basis for sixty years, and would be a perpetual supply, if reforested. Please keep in mind the fact that any tree or plant has fibre adaptable to some kind of pulp or paper and, therefore, sometime, all our species of timber will be used as raw material for pulp and paper.

Economics

We have now looked over our figures showing our raw material, consumption, production and markets as well as had a glimpse at what we may hope for in the future and this study seems to definitely place the Northwest as the center of our future production of pulp and paper.

In the study of the economics of our situation we need not be frightened by talk of freight rates, cost of wood, cost of power, sales cost, etc., because it is after all not a question of the cost of any one item which will decide the result as to profit and loss but the sum total of costs of the product delivered to the consumer, and in this respect the Northwest stands in a position second to none.

It is true that power must be available, as must water in large quantities and good quality. Transportation must be considered and the advantage in this one item certainly rests with the mill having both deep water and rail shipments. These items with the balance of the details require careful study before a start is made.

If, however, a careful study by an experienced person shows that a proposed mill is properly located, has raw material, water, power, transportation, and labor and can manufacture at a satisfactory cost and is properly financed it leaves only the question of sales and management to be dealt with.

We know that sales can be made as the demand exists and if the price of the product delivered to the customer is low enough to meet competition and quality is right the sales can be handled.

Management probably causes more failures than any one factor and as this is a complicated business requiring large capital the management should be guided by an organization having experience in manufacture and sales of the product.

The Northwest stands alone as a source of future supply and this is confirmed by the fact that the gaze of Eastern manufacturers turns reluctantly westward while attempting to delay the day of closing mills located at points from which the raw material has vanished.

This completes our survey of available wood, possible markets and our Northwest's possible share in the industry's development, and the facts stated indicate that we have the opportunity to meet a world need in production; that we need not fear over-production; and that we are in an economically sound position, but with each individual having its own problems to solve.

It seems to me that we have, in this general look at the industry, covered the subject but like our California friend I would like to mention our climate and working conditions.

And another thing....

your paper machines, beaters, slitters, wires, felts and rolls will last longer and turn out more uniform product if they run on New Departure Ball Bearings.

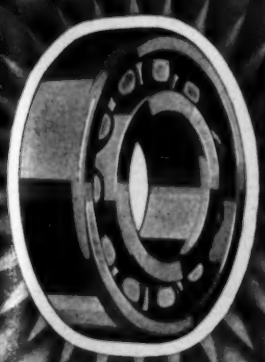
New Departure steel and New Departure engineering combined provide the ultimate in friction elimination. Frictional wear means adjustment or replacement. New Departures are more highly resistant to wear than any other bearing, therefore adjustment is never needed and because they have extremely long life replacement is seldom necessary.

New Departures have built-in capacity to carry loads in any direction at any degree of speed and offer advantages in paper making machine construction that cannot be ignored.

The American Assembling Machine Company uses 830 New Departures in the binding machine illustrated.

Write for Application Data Sheets.

The New Departure Manufacturing Company
BRISTOL, CONNECTICUT
Detroit San Francisco Chicago



New Departure
Quality
Ball Bearings

As consumption apparently will always be limited by production we make following comments to further justify the industry in the Northwest, and with full appreciation of the permanent place held in the industry by Canada and the Eastern States.

We have a twelve month season for harvesting our wood as against an eight month season in the Eastern States and Northeastern Canada and to this advantage we should add the fact that while our timber will stand 60 to 100 cords per acre our Eastern competitors have stands of 3 to 15 cords per acre.

These conditions mean that our cost of wood will be from $6 to $12 per cord less than Eastern wood, our labor will cost less as will our heating and our building construction.

Transportation to our large centers of population gives an advantage to the East as our cost per ton of news print will be $12 to $13 as against the cost from Canadian mills of about $4 to $5 per ton. Let us grant them an advantage of $8 per ton for such tonnage as goes to the East Coast as it is their only advantage and is overbalanced by our low wood costs etc. as outlined above.

The picture finally seen is that the world not only must finally come here for its raw material but nature works with us to allow us to live and manufacture at such a low price that we can be sure of satisfactory profits.

Financing Pulp or Paper Mills

In closing may I take just a moment in which to discuss the question of precautions to be taken before financing such a project as a pulp or paper mill. This financing, it seems to me, should follow the study of the following steps: *First;* Is the project fundamentally sound as to location, raw material costs, etc.; *Second:* Is the market for the product established and expanding. In other words, is sale of the product assured. These two points should be covered by a report by a recognized authority; *Third*: Is the proposed management competent to handle such a project.

If these three points can be satisfactorily answered, it seems to me, there is no reason why credit should not be extended and the project financed. I understand that you may wish to ask some questions and if this is the case, I will be glad to answer to the best of my ability. I thank you for this opportunity to meet with you to outline this important subject for you.

Edward L. Embree Dead

BUENA VISTA, Va., February 6, 1928.—Edward Lawrence Embree died at his residence here Sunday evening, January 29. He was born in New York City on August 8, 1850, and was connected with the manufacture of pulp and paper for many years before moving to Buena Vista to become treasurer and afterwards general manager of the Columbian Paper Company of Buena Vista and Bristol. He also organized the Embree Company for the manufacture of stationery and paper novelties. About ten years ago, Mr. Embree retired from active business on account of ill health.

Besides the widow, there survive two sons, Royal B and Lawrence Embree, Buena Vista; and two daughters, Mrs. D. D. Towers, Fort Worth, Texas, and Mrs. Dr. Geo. Street, Vicksburg, Miss.

Funeral services were held at the residence Tuesday afternoon at four o'clock, and interment was in the family burial plot in Westfield, N. J.

Central States Envelope Co. to Expand

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., February 6, 1928.—The acquisition of eleven city lots to be used in the future expansion of the Central States Envelope Company of Indianapolis, a subsidiary of the United State Envelope Company, was announced recently. The lots are located at Sherman drive and Washington street, where the company a year ago made additions to its factory. The newly acquired property has a frontage of about 360 feet on the Brookville road. The consideration was not made public.

ONTARIO MORE ACTIVE

(*Continued from page 32*)

as the guests of the Woodlands and Technical Sections of the Canadian Pulp and Paper Association at the Mount Royal Hotel.

News and Jottings of the Trade

The Lincoln Pulp and Paper Company, Ltd., with mills at Merritton, Ont., and sales office in Toronto, have just put out a new line of paper known as "Embossed Glassine," a transparent wrapper with an artistic embossed marking and a silk finish. Extensive use of the paper for candy boxes and bars and fancy packages of all kinds is predicted. It is manufactured in Moire, Herringbone and Persian Lamb, in two sizes, 24x35 and 30x40. The firm states that new and special uses where Embossed Glassine will help to sell goods are being worked out every month.

Fred G. Hunt, who for seven years has occupied important positions with Kilgour Bros., Ltd., paper box manufacturers and dealers in wrappings and other paper lines, has severed his connection with that firm and has joined the sales staff of the Telfer Paper Box Company. The latter company are about to occupy a large new addition to their plant on Duncan street.

Life insurance in excess of three quarters of a million dollars has been written on the lives of the employees of the Federal Printing Bureau at Ottawa. Over 430 persons are included in the policies, which are on the group plan. The policies form one of the largest amounts to be issued under this system in Canada.

Howard Smith Paper Mills, Ltd., have sent out an attractive folder containing an aerial photograph of their Cornwall, Ont., mill taken in October, 1927, just before operations were commenced to build a new paper machine at the plant. The new machine will be 154 inches wide, suitable for the manufacture of sulphite bonds, offset and lithograph papers, and will be in operation by May of the present year. The folder is printed on Carlyle Japan, plate finish.

The quarterly meeting of the Toronto Carton Council was held in Toronto this week when a round table conference was held on the subject, "What points of general interest does your inventory reveal?" Some interesting and beneficial points were brought out in the general interchange of experiences. In respect to folding cartons it was brought out that in place of producing a large quantity of, say a million, in one long run, and keeping in stock a large quantity of finished stock, it was often more economical and better business to produce such quantities in two separate runs. Following the business session, adjournment was made to the Yellow Room of the King Edward Hotel, where the ladies of the members were entertained at dinner.

Provincial Paper Mills, Ltd., head office Toronto, are preparing for distribution to the paper trade an attractive sample book of their various lines carrying an artistic reproduction of their Port Arthur mill.

R. H. Anderberg, Montreal manager of Paper Sales, Ltd., Toronto, has returned from a trip to the Maritime Provinces.

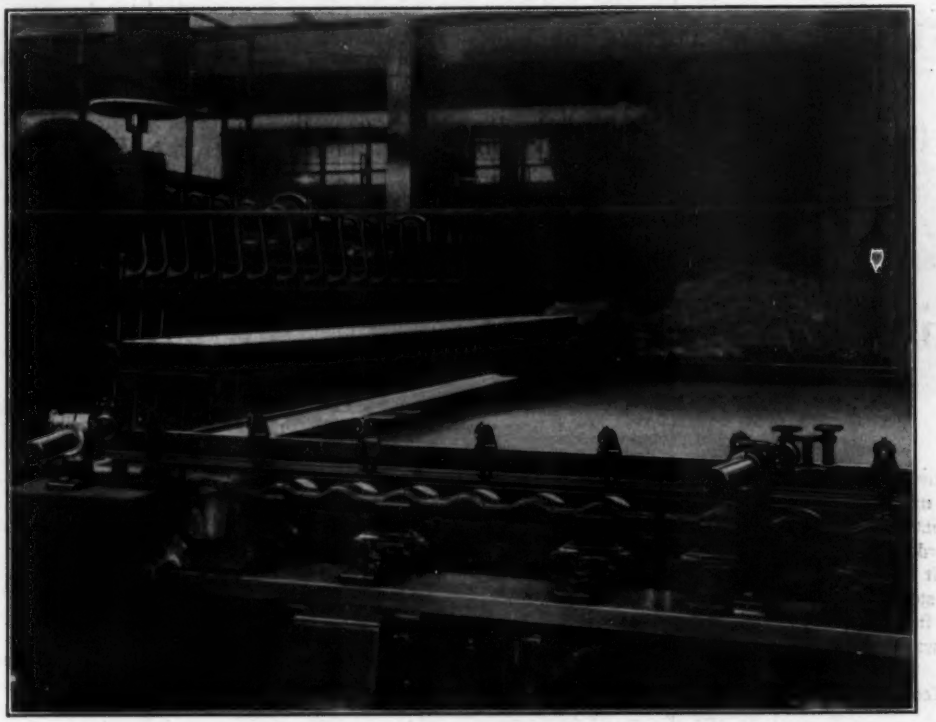
C. E. Whitten, of the Canadian Paperboard Company, Ltd., Montreal, was a business visitor in Toronto this week.

Gustavo Elsner, of Wasserman & Co., large paper dealers in Buenos Aires, Argentina, was a caller on a section of the Toronto paper trade this week.

West Plant Damaged by Fire

[FROM OUR REGULAR CORRESPONDENT]

TROY, N. Y., February 6 ,1928.—The plant of the A. E. West Paper Box Company on First avenue, North Troy, was badly damaged as the result of a fire which threatened the destruction of the building. The West company occupied the first floor which is two stories in height. The blaze originated in the top of the building and tons of water thrown on the blaze soaked through to the box shop drenching stock and equipment. Officials of the company could not estimate their loss until a careful check up of the damage was made but it was believed that insurance would cover only a part of the loss.



Cut Your Production Costs!

The Voith Inlet With Wentz "No-Deckle" Device Will Help You Do It

As an added advantage to increasing its efficiency for cutting production costs, the Voith Inlet can be installed on your paper machines, either Fourdrinier, Yankee or Harper with the Wentz "no-deckle" device. The installation of the "no-deckle" device is done easily and without other equipment than the device itself. And, when it is installed, you can throw out your deckle straps, with their disadvantages.

The Wentz "no-deckle" device further adds to the life of the wire, as the weight and strain on the wire is removed. Wear on table rolls where the pressure of the strap on the wire grinds them down is eliminated, as the weight and pressure of the straps are moved.

The Voith Inlet adds 10% to 15% longer life to wires, for with it the wire does not have to support any excess weight of water and stock. There are fewer shutdowns of paper machines caused by breaks.

—And, the Voith Inlet will help you produce better paper while cutting production costs. As the stock is fed accurately onto the wire and more wire surface is used, there are fewer water streaks—fewer lumps and foam spots.

The Voith Inlet with the Wentz "no-deckle" device is equipment you should investigate now—when there is every necessity for cutting operation costs. Let us send you complete information. Write today.

VALLEY IRON WORKS CO.

Machinery for Paper and Pulp Mills

APPLETON WISCONSIN

New York Office: **350 Madison Avenue**

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Power Plant Section

To Promote the Most Efficient and Economical Distribution of Power

Reducing Power Costs Through Unit Treatment

Conducted by REGINALD TRAUTSCHOLD, Consulting Engineer

Sensitive Boiler Feed Water Regulation Yields Handsome Dividends

To pare production costs down to a minimum, the aim of every progressive paper mill, necessitates a dependable source of steam under sensitive control at all times. This is quite generally appreciated, but in order to have a dependable source of steam under sensitive control, it is imperative that every possible provision be made to have the steam supply, not only adequate, but of uniform quality. In fact, far more depends upon the suitable regulation of a proper feed water supply for the boilers than is customarily realized.

Presumably, a feed water heater is employed, and one of the first requisites is the maintenance of the best feed water temperature. Unless the water supply to the boiler is always at very nearly the same temperature and as hot as is feasible, its conversion into steam by the boilers entails differing demands, variations in duty, which invariably affect adversely the efficiency of the boiler and the process of steam generation, and fuel is wasted. The necessary temperature control is secured by various types of thermostatic regulators, of the self-operating, air operated or steam-operated types. In all cases the regulating pressure is created in a thermostat bulb, containing a fluid senstitive to slight variations in temperature, which is inserted directly into the feed water in the heater. The pressure developed by the heat of the feed water in the heater is communicated to the bonnet of a diaphragm-valve through a connecting flexible tube.

Automatic Feed Water Temperature Regulators

In the self-operating type of regulator, the actuating pressure of the diaphragm, developed by the thermostat bulb temperature, serves to cut off the supply of steam to the heater as the feed water temperature rises. The movement of this disphragm is adjusted to the required temperature by means of a weighted lever adjustment, spring or other mechanism so arranged that when the feed water temperature is below that required, the adjustment opens the steam admission valve to the heater. In closing the admission valve, when the feed water temperature is higher than required, the operating function of the diaphragm, the thermostatic pressure has to resist and overcome the action of the weight, spring or other valve opening mechanism in order to cut off the steam supply to the heater. A sensitive balance is thus created between the thermostatic pressure which tends to shut the admission valve and the adjustment which tends to open the admission valve, the disturbance of which is utilized to raise or lower the rate of heat supply (of steam admission) to the feed water heater, so maintaining the feed water supply temperature substantially constant.

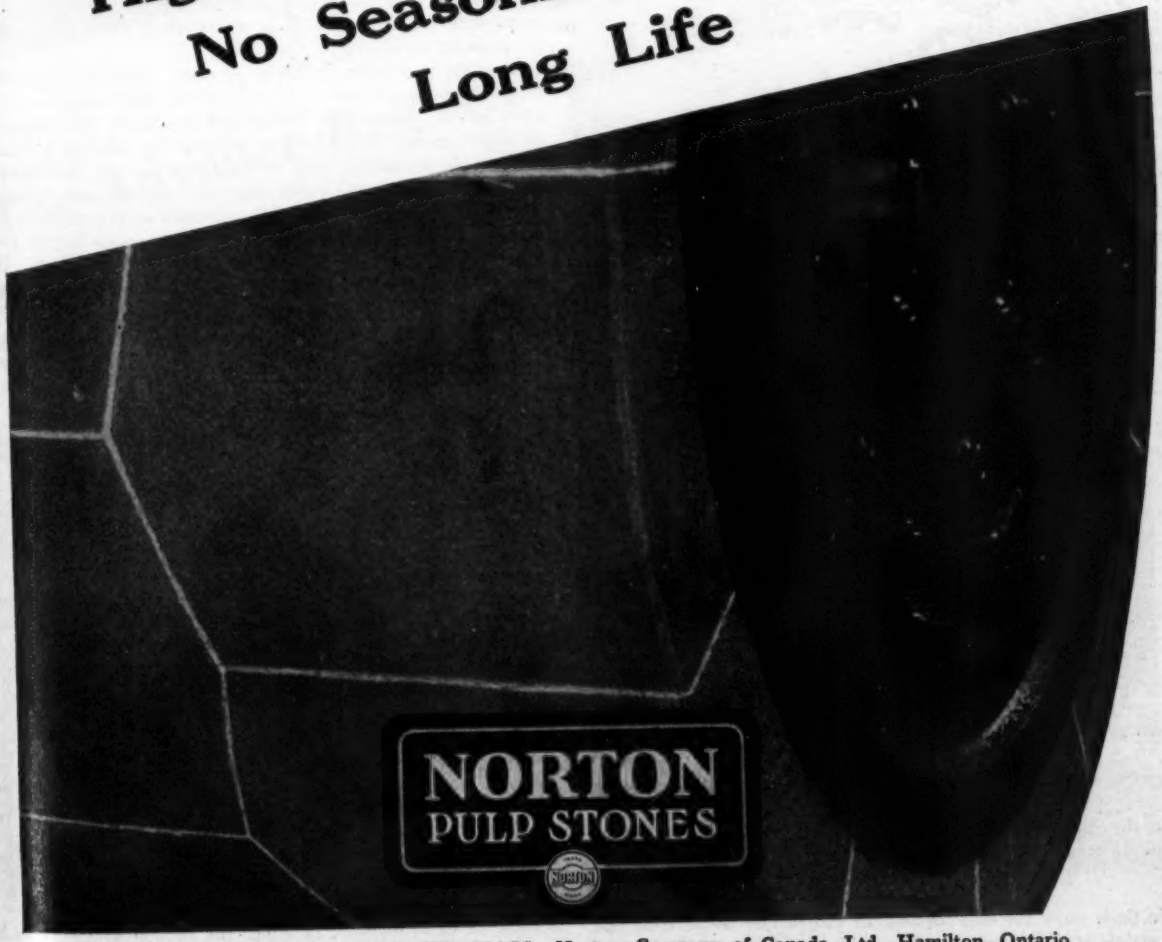
The air-operated type of regulator functions in much the same way, except that the movement of the controlling diaphragm valve is regulated through the agency of a compressed air supply. Very sensitive regulation of feed water temperature is secured by these air-operated devices, but their use is somewhat limited because a suitable compressed air supply is not always available. This lack has been responsible in large part for the latest development in automatically operated regulators, those which employ the heating steam to control its own admittance to the heater.

These steam-operated regulators simply utilize a small portion of the steam used to elevate the temperature of the feed water supply to furnish the power with which to operate, with extreme sensitiveness, the valve opening and closing which governs the admission of steam to the heater. A thermostatic bulb, inserted in the feed water heater, is connected to the diaphragm valve through a metallic bellows, forming part of the thermostat system, and exerts pressure upon a small pilot valve which controls the opening, closing or cracking of the steam valve regulating the flow of steam to the heater. A novel feature of this device is that steam is admitted to the diaphragm chamber both below and above the actuating diaphragm through a connecting passage. The pilot valve, which is manipulated by the thermostatic pressure developed by the temperature of the feed water, opens, closes or throttles a port leading from the upper section of the diaphragm chamber, so that the movement of the diaphragm which controls the opening of the steam admission valve is regulated by an extremely sensitive differential pressure.

When the pilot valve opens, when more heat is required to maintain the proper feed water temperature and the functioning pressure created by the thermostatic bulb is below normal, the steam in the upper portion of the diaphragm chamber escapes via the pilot valve port more rapidly than fresh steam can enter the upper chamber by the passage through the diaphragm, the diaphragm rises and the steam admission valve opens. As the feed water temperature approaches normal, the pilot valve gradually closes, until, if the water temperature exceeds normal at all, it shuts tight.

Location	Feed Water Regulator Installation	Major Improvements Realized	Investment Entailed	Estimated Annual Saving	Yearly Return on Investment
Robert Gair Company	9 Automatic	Labor costs reduced	$1,440.00	$4,686.30	325 per cent
Bryant Paper Company (Milham Division)	6 Automatic	Labor costs reduced	1,753.50	2,156.77	123 per cent
Interlake Pulp & Paper Co.	6 Automatic	Labor costs reduced	960.00	4,729.78	493 per cent

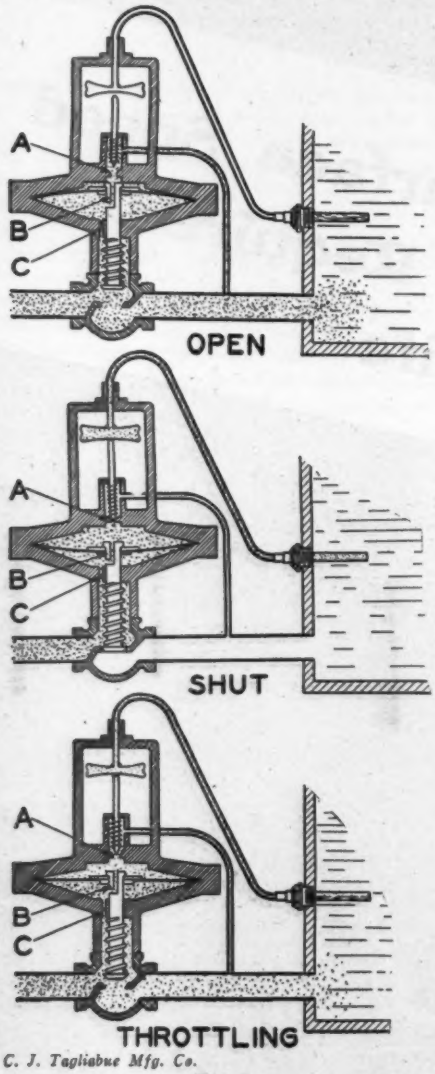
High Average Surface Speed
No Seasoning Required
Long Life



NORTON COMPANY, WORCESTER, MASS.: Norton Company of Canada, Ltd., Hamilton, Ontario

This prevents the escape of steam from the upper portion of the diaphragm chamber and the steam pressures on the two sides of the diaphragm promptly equalize, the diaphragm becomes inoperative and the steam admission valve closes and remains shut as long as the thermostatic pressure is sufficient to keep the tiny pilot valve closed.

When the feed water temperature is exactly as it should be, there is not sufficient unbalanced thermostatic pressure to keep the pilot valve seated nor a sufficient lack of such pressure to permit the wide opening of the pilot valve and the rate of steam escape from the upper portion of the diaphragm chamber is such that the differential, opposed by a spring pressure which unseats and partially opens the steam admission valve, maintains the steam valve at the correct opening for so-called cracking, or throttling. That is, just sufficient steam is allowed to enter the heater to maintain the correct feed water temperature under customary conditions of demand.



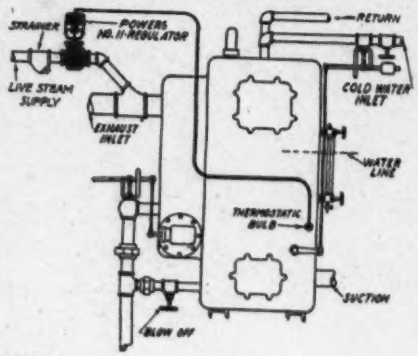
Courtesy, C. J. Tagliabue Mfg. Co.

FIG. 1

Diagrams of Steam-Operated Feed Water Temperature Regulator in Action

Control of Boiler Feed Pumps

In these ways, the first requisite of satisfactory boiler feed, that of maintaining substantially constant the temperature of the feed water supply, is effected, an important step in the proper servicing of the boiler plant. The actual feeding of this satisfactory water supply to the boilers, however, presents a second problem of major importance in maintaining boiler efficiency and in husbanding the fuel supply. Here, again, dependable instrument control is of the utmost importance, for with what are the almost unrivaled severity of demands on the boiler plant in the paper mill, feed water control by hand cannot follow sufficiently closely the changes in boiler load and adjust the rate of feeding to correspond to such load requirements. Furthermore, the cost of feed water control by hand is considered quite prohibitive in plants where automatic regulators for such service have been installed.



Courtesy, The Powers Regulator Co

FIG. 2

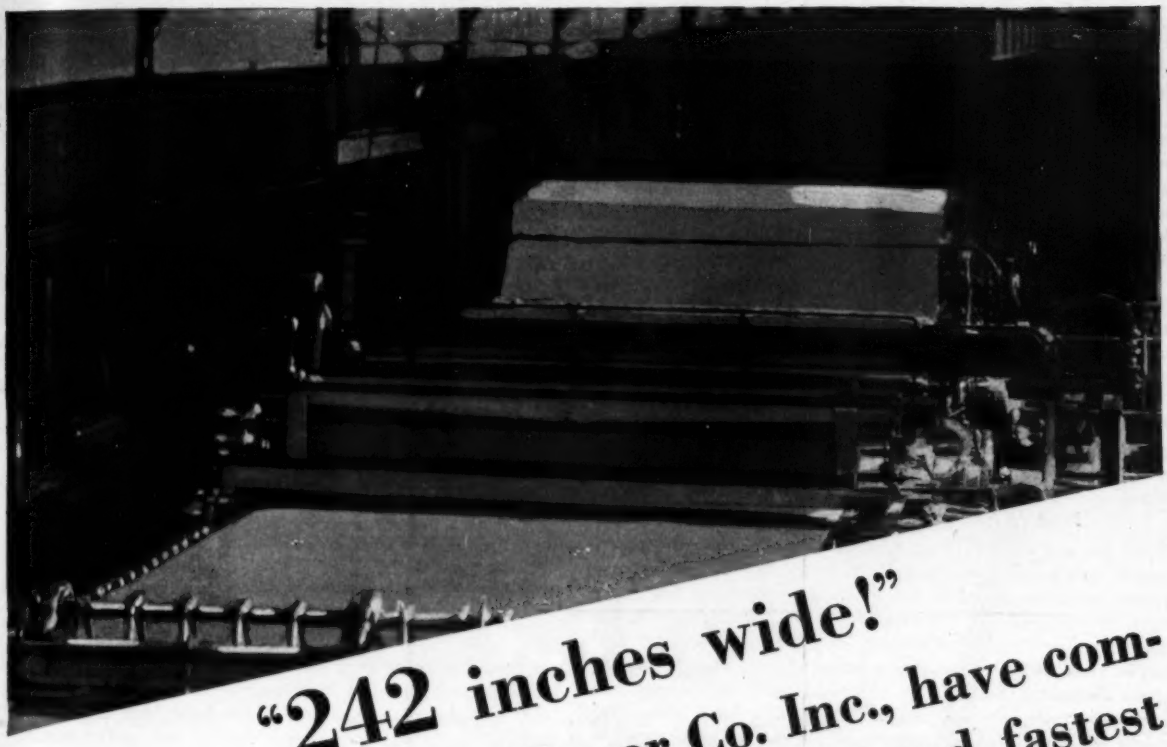
Automatic Temperature Regulator Application to Feed Water Heater

A satisfactory boiler feed line pressure, somewhat in excess of the boiler pressure, has to be maintained, obviously, but to conserve power, regulate the boiler feed sensitively and supply only the exact amount of feed water required for existing load conditions, it is imperative that a constant pressure differential be maintained between the boiler feed line and the boiler pressures. For instance, in a plant operating normally with steam at a boiler pressure of 175 pounds, a boiler feed line pressure of 200 pounds might be quite suitable, a differential pressure of 25 pounds. When the load is off and pressure down to that just sufficient to operate the auxiliaries alone satisfactorily, say at 125 pounds, the suitable boiler feed line pressure would be then, not 200 pounds, but 150 pounds. The pressure differential should remain the same, but the boiler feed line pressure drop off in like amount to the lowering of the boiler operating pressure.

Automatic regulators to maintain constant this pressure differential, boiler feed line excess pressure, are procurable to control steam or electrically driven boiler feed pumps, so that the feed line pressure will follow the boiler pressure up or down, always maintaining the desired excess of water pressure for feeding the boiler and no more. They have opposing pressure chambers above and below a weighted or spring pressed scale beam or else employ a liquid column, the boiler pressure connection being made to the lower chamber and the feed line pressure connection to the upper diaphragm chamber. The weights, spring pressure or liquid column are applied to balance the desired pressure differential between the feed line and boiler pressures.

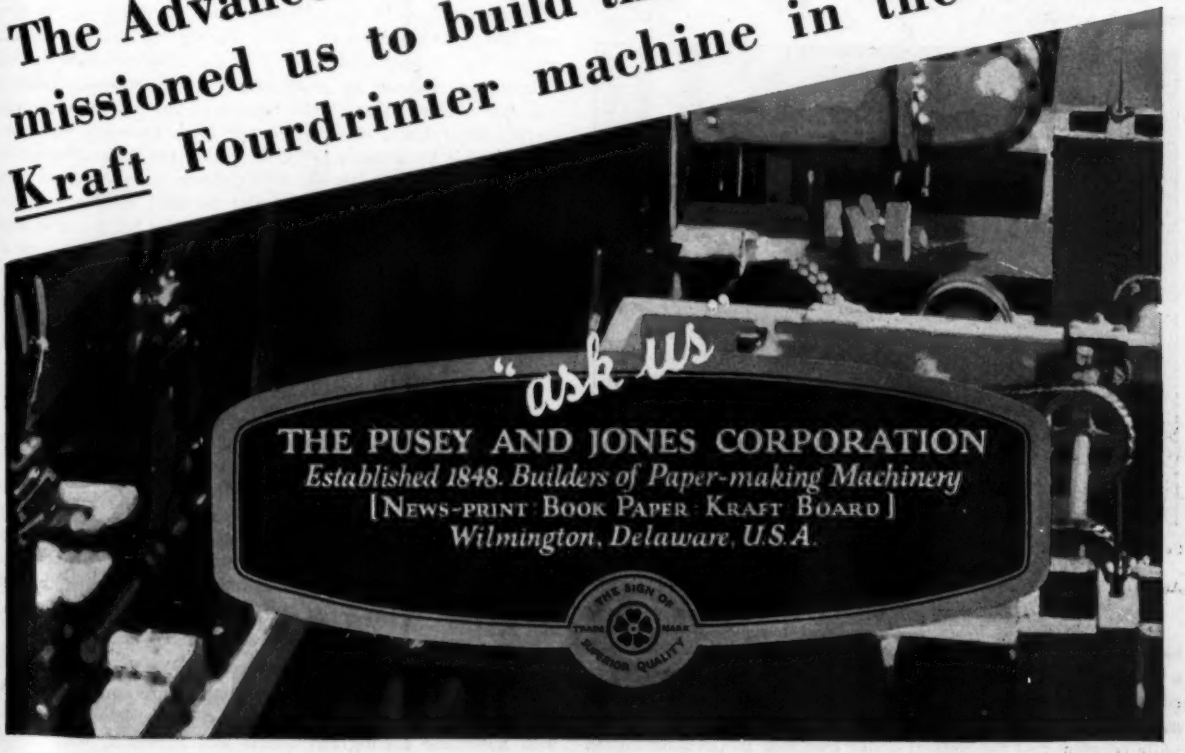
In the hydraulically operated type, the motor plunger is operated by water pressure, the movement of which is used to control dial switches or drum controllers for governing variable speed motor driven boiler feed pumps, or is utilized to control a balanced chronometer valve when used to govern steam driven pumps. The regulator may also be used as a belt shifter for controlling the operation of power driven boiler feed pumps, belt driven units.

When used for the control of constant speed motor driven pumps, regulation of the water supply to the boilers is effected by a balanced valve installed in either the suction or discharge line of the pump. The result in such case is, not only the maintenance



"242 inches wide!"

The Advance Bag & Paper Co. Inc., have commissioned us to build the widest and fastest Kraft Fourdrinier machine in the world.


"ask us"
THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-making Machinery
[NEWS-PRINT BOOK PAPER KRAFT BOARD]
Wilmington, Delaware, U.S.A.
THE SIGN OF SUPERIOR QUALITY

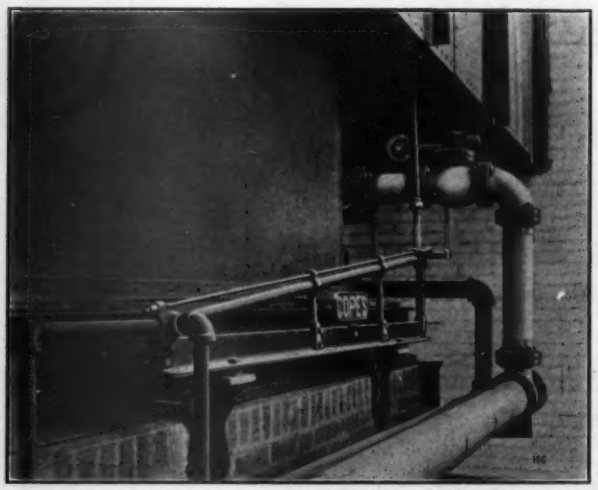
of uniform excess pressure in the feed line, but an unloading of the motor to a considerable extent, resulting in quite substantial savings in power consumption.

In the differential pressure type, the installation and functioning of which does not differ radically from that of the hydraulically operated type, the valve travel, controlling the steam supply to the pump or the discharge from the pump, as the case may be, is much greater than the necessarily limited movement of the diaphragms. The functioning spring has a still further restricted movement. With the leverage proportion employed, consequently, a quite considerable movement of the valve is effected with a slight variation in the pressure acting on the diaphragm.

Still another type of these regulators for maintaining a predetermined differential feed line pressure above boiler pressure is equipped with reversible electric motors for "step action" regulation. The regulators are usually supplied with the same number of cut-off points as there are speed regulating points on the drum controller of motor driven apparatus. In this way, the regulator accentuates the position of the controller arm, so that arcing and consequent burning of the speed regulating contacts are practically avoided.

Feed Water Regulation and Regulators

With the aid of such regulating instruments for maintaining constant feed water temperatures and boiler feed line differential pressures as those to which brief reference has been made, the proper servicing of the all important boiler battery entails one more very important consideration, i.e., the most efficient and effective rates of boiler feed for meeting at least expense the extremely fluctuating demands for steam in paper mill service. In this connection, it is a well recognized fact that for a given load the best boiler efficiency is secured with a certain water level in the boiler. The maintenance of such water level governs, naturally, the proper rate of boiler feed, but when the load varies considerably the water level for the most efficient boiler operation will also shift to some extent and must influence, consequently, the rate of best water feed.

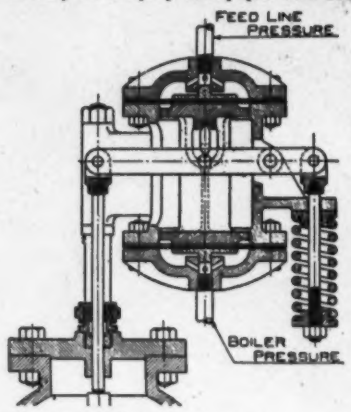


Courtesy, Northern Equipment Co.

FIG. 4

Automatic Feed Water Regulator for Holding Water Level Between Fixed Limits

If it were possible to coordinate closely the supply of furnace heat to the boiler feed, or to the load on the boiler, as is done with a certain degree of success in service where the fluctuations in steam demands are not so marked nor as sudden as they are in paper mill service, the best boiler water level would be substantially constant and the efficient boiler feed rate proportional to the load at all times. In paper mill service, however, it has been found that it is not feasible to coordinate so closely the supply of furnace heat to the load on the boilers. The furnace temperature is not under sufficiently sensitive control and the rate of heat transfer to the boiler contents not sufficiently rapid. What may be well termed the lethargy of the furnace and of the boiler contents in absorbing the heat supply becomes a dominant consideration in efficient boiler operation when the demands for steam vary widely and suddenly as they do in pulp and paper mill services.



Courtesy, Ruggles-Klingemann Mfg. Co.

FIG. 3

Sectional View—Boiler Feed Line Excess Pressure Regulator Differential Pressure Type

A method of combating this furnace lethargy which has proved decidedly efficacious, judging from the number of feed water regulators embodying the principle which have been installed in the paper mills of this country and Canada during the past ten or twelve years, is the establishment of a water level range between fixed limits, a low water level on heavy loads and a higher one on light loads, for temporary periods.

When the boiler load decreases for any reason, more water is automatically fed into the boiler temporarily, to take up the excess heat being absorbed by the boiler during the interim while the furnace heat supply adjusts itself to the reduced steam demands. This conserves steam by preventing a rise in steam pressure and resulting wastage through the release of the boiler safety valve. On the other hand, when the boiler load increases, the rate of boiler feed is temporarily reduced, so that the boiler pressure will not drop too far by reason of excessive withdrawal of steam. Maintaining the constancy of boiler pressure in this way keeps up the boiler efficiency until such time as the furnace heat supply is built up to the steaming requirements for the increased load with normal water level. The limitation of boiler feed at the instant of picking up the heavy load is also instrumental in avoiding the priming common to boilers when the feed supply is maintained or accelerated during periods of sudden heavy steam demands.

While maintaining boiler efficiency over the critical interims when furnace conditions are adjusting themselves to steam demands, the distinguishing characteristic of this type of automatic feed water regulator, effects no inconsiderable saving in fuel, the outstanding economy from the use of such devices is the elimination of the water tending expense necessary when depending upon hand regulation. In fact, the marked satisfaction these regulators have given in very extensive paper mill service is attributed generally to their satisfactory automatic operation which materially cuts labor expense in boiler servicing.

Typical Savings

At the Robert Gair Company, Piermont, N. Y., nine boilers, aggregating some 3,732 horsepower capacity, are equipped with this type of automatic feed water regulator, the boilers all being fired with automatic chain-grate stokers and furnished with complete complements of meters and automatic control apparatus. Steam is generated at 150 pounds pressure, with 40 to 50 degrees of super-

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Variations from the required pressures mean waste—Mason Regulators hold the pressures where they belong and make the saw teeth in your charts disappear.

Each regulator is tested before it leaves the factory to meet the exacting conditions of the service for which it is to be used. Its accuracy does not diminish with long, continuous use.

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rating. Occasional peaks force boiler operation to 300 per cent or more and there are other periods when the boiler load is considerably below normal.

The feed water regulators, holding the water level between fixed limits, high on light loads and low on heavy ones, discharge their functions so admirably that the services of three men, one on each shift, as water tenders are entirely eliminated, effecting an annual saving of $680 in labor expense. The avoidance of priming at heavy loads, which is directly attributable to the water-level range principle, effects a daily saving of 1.4 gallons of engine lubricating oil, computed at $236.60 a year.

Annual Operating Cost

The total annual operating cost of the nine feed water regulators, including all fixed charges and making adequate provisions for maintenance, repairs and cleaning-labor expenses, is a matter of $230.30. The installation, consequently, which entailed an investment of only $1,440, effects a net annual saving of $4,686.30. This is at an annual rate of yield on investment of 325 per cent, the installation about paying for itself every 100 days.

At the Milham Division plant of the Bryant Paper Company, Kalamazoo, Mich., feed water regulators of this type, serving six Wickes boilers, save 12 man-hours a day, half a man's time on each shift, which would otherwise be entailed in water tender service. This labor economy is valued at $2,496.60 per year. This is largely net, for there is very little expense connected with the upkeep of the regulators. They are inspected and cleaned when the boilers are down for cleaning, at which time such repairs as may be necessary are made. About 72 hours a year are entailed and the cost of the repair parts during the past eight or ten years has been about $2.50 per regulator per year.

The total cost of these regulators per year, including all fixed as well as upkeep and operating charges, is $339.23, so the net annual saving their use effects, also without consideration to improvement in boiler efficiency and fuel conservation, amounts to $2,156.77. This represents a return of 123 per cent on the investment and repays the cost of the entire installation in approximately 10 months.

Another Example of Saving

Still another example of the savings effected by servicing the plant by sensitive feed water regulator control is in the case of the Interlake Pulp and Paper Company, Appleton, Wis. Six of these regulators serve the same number of 300 horsepower Stirling boilers and during the first six years they were in operation did not contract a single cent of expense for repairs.

The steam supply at this plant, with the exception of a small amount required for the operation of the power plant auxiliaries, is all used for process operations, chiefly for drying pulp and cooking sulphite. The load on the boilers, as a result, fluctuates between wide limits, the different machines being thrown on suddenly and requiring large amounts of steam. Cookers drawing 300 to 400 boiler-horsepower, for example, are thrown on and taken off the steam lines periodically. The severity of such service naturally taxes to the utmost the regulators' ability to maintain satisfactory boiler efficiency during these violent load changes. So successfully is it done, however, that when a heavy demand comes on the boilers there is no material drop in pressure and if the load continues, the brief interval of retarded boiler feed quickly hastens the combustion rate to meet the load demand.

The half dozen regulators cost $960, making the annual cost of the devices, including fixed charges, depreciation, maintenance and providing for a generous repair allowance, $88.22. The services of a 55-cent an hour water tender are entirely dispensed with, a labor saving of $4,818 a year, so the net annual saving effected by the regulators in this one direction alone is $4,729.28, a yearly return of 492.7 per cent on the investment. In other words, the regulators pay for themselves every two and a half months.

Railroad Rate Complaint Upheld

ALBANY, N. Y., February 6, 1928.—The recommendation that the Interstate Commerce Commission find "unreasonable" railroad rates on bituminous coal in carloads from producing fields in Western Pennsylvania and West Virginia to Syracuse, N. Y., and points within the Watertown-Massena group made by Commission Examiner James J. Williams in a report to the rate making body has been upheld by the International Paper Company, St. Regis Paper Company, and the Syracuse Chamber of Commerce in a brief filed with the Commission.

The complainant companies and Chamber of Commerce upheld the following statement of the Examiner to which the railroads took exception:

"The territory north of Syracuse is both agricultural and industrial, paper making being the largest industry. The Black River Valley is one of the largest producers of paper in the country and competition in that industry is severe. It is also meeting keen competition from the Canadian producers. Considerable difficulty is now being experienced by American mills in meeting that competition because of the rapid depletion of the pulp wood supply in Northern New York. This situation has been responsible for removing of three mills from the Black River Valley alone to Canada."

In connection with this statement which the carriers declare is erroneous the complainant's reply stated that the Examiner's statement is correct. "The record shows," the brief explained, "that the migration of the paper industry to Canada is due to competition, especially with producers in Canada. It is not necessary to refer to all the factors in that competition. The depletion of the pulp wood supply in Northern New York is a very important factor as are also the excessive coal rates. The Examiner's description of the situation is brief, simple and accurate and we object to this attempt of the carriers to color it to their liking. It would of course be to their advantage to blame the plight of the New York producers upon labor costs and everything else except the freight rates. But there is no reason why the report be set up in that fashion because the carriers would be better pleased with such a presentation."

A. M. Miller Heads Central Ohio Paper Co.

COLUMBUS, Ohio, February 6, 1928—Election of A. M. Miller as president of the Central Ohio Paper Company to succeed O. A. Miller, who was elected chairman of the board and re-elected treasurer, marked the 41st annual meeting of the company here Saturday, January 28.

Officers elected at the meeting were as follows: Chairman of the Board, O. A. Miller; President and General Manager, A. M. Miller; First Vice President, F. E. Miller, Manager Fine Paper Department; Second Vice President, R. W. Miller, Manager Wrapping Paper Department; K. D. Wood, Secretary, W. H. Bancroft, Vice President, Manager, Dayton, Ohio; Wm. Jones, Vice President, Manager, Cleveland, Ohio; K. S. Moening, Vice President, Manager, Toledo, Ohio; J. F. Page, Vice President, Manager, Sales; R. C. Williams, Vice President, Manager, Mfgrs. Depts.

The relinguishing of his duties as active head of The Central Ohio Paper Company by O. A. Miller comes after 41 years of service as president of the organization. He became identified with the company soon after it was organized as a partnership in 1872 and in 1887 became president when the company was reorganized as a corporation. Since that time he has been actively at the head of the development of the company to its present position in the paper industry. He was the first president of the National Paper Trade Association, a position also held by his son, A. M. Miller, who succeeds him as president of "Copco," and who has for several years occupied the position of vice-president and general manager of the company.

A satisfactory year in the company's sales and development was reported at the meeting.

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A 154-inch Fourdrinier machine equipped with C-H (Harland) Drive—Provincial Paper Mills, Port Arthur, Ontario.

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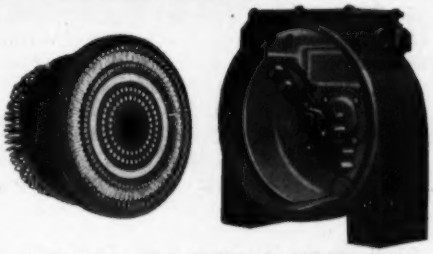

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Industrial Efficiency Depends on Electrical Control

New York Trade Jottings

George W. Sisson, Jr., president of the Racquette River Paper Company, was a New York visitor early this week.

* * *

Walter D. Randall, vice-president and mill manager of the Champion Coated Paper Company, of Hamilton, Ohio, spent several days in New York last week.

* * *

Arthur C. Hastings, vice-president and general manager of the Cliff Paper Company, Niagara Falls, N. Y., visited his friends in the local paper industry last week.

* * *

H. Reeve Angel & Co., Inc., New York, Ernest Child, president, are applicants for membership in the British Empire Chamber of Commerce in the United States.

* * *

O. M. Porter, acting secretary of the American Paper and Pulp Association, attended a meeting of the New York Section of the Society of American Foresters at Albany last week.

* * *

The regular weekly meeting of the New York Division of the Salesmen's Association of the Paper Industry was held in the Canadian Club last Monday. There will be no further meeting until the Monday following the Convention.

* * *

V. D. Simmons, paper mill engineer, of Chicago who has charge of the design and construction of the new Zellerbach mills, was in New York last Monday . He has been enjoying a holiday in the Sunny South with his wife.

* * *

Dr. Dormer arrived in New York last week from Budapest aboard the Royal Mail liner *Olympic* to confer with the Department of Agriculture in Washington on his process of making cellulose from cornstalks.

* * *

M. O. Wood, the well known paper mill superintendent, of Herkimer, N. Y., and his wife, sailed from New York last Saturday aboard the steamer *Empress of Scotland* on a three months' cruise through the Mediterranean to the Holy Land and Egypt combined with a tour through Europe and the British Isles.

* * *

The Eaton-Dikeman Company is sending announcements to the blotting and filter paper trade of the resignation of Byron S. Proper, sales manager and the appointment of A. L. Newton, secretary of the company as sales manager with office and warehouse at 537 Pearl street, New York. Mr. Newton has been with the company for the past seven years, working up through the various manufacturing departments and has for the past two years, been very active in the Sales Department. With his experience in the manufacture of various blotting, filter, absorbent and saturation papers, manufactured by The Eaton-Dikeman Company, he is in an excellent position to give the best of service to those using any of these papers.

Century Paper Co. to Have Exhibit

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., February 6, 1928.—The Century Paper Company of Indianapolis is sponsor for an exhibit of "art in printing" which is to be held in the Hotel Lincoln next week and will be open from 10 o'clock in the morning until 9 o'clock at night. The exhibit will have specimens of printing gathered from all parts of the country by three large manufacturers, the Champion Coated Paper Company, the A. M. Collins Company and the Strathmore Paper Company. The newest type faces and most modern treatment of design and color will be shown.

Annual Paper Convention Plans

At the 51st annual convention of the American Paper and Pulp Association, to be held at the Waldorf-Astoria Hotel, February 20-23 inclusive, there will be meetings of paper manufacturers—writing, wrapping, book, tissue, cover, bristol, tag and binders' board, cardboard, etc., and of paper converters—waxed, glazed and fancy, gummed tape, etc—of paper merchants, salesmen, technical men, cost accountants, foresters. At these group meetings reports will be presented and considered covering the specific group's progress or difficulties during the recent months; some prognostication as to what is ahead and how the industry, as a unit, can most effectively meet the situation for the legitimate profit of its individual members.

At the Annual Business Meeting of the American Paper and Pulp Association, President Everest will discuss the executive committee's plans for the effective development of organized service in the industry. O. H. Cheney, vice president of the American Exchange Irving Trust Company will speak from a wealth of experience on ways of "Meeting the New Competition." Henry A. Wise, the Association's counsel, will discuss "Lawful Combination in Industry."

Ernest Mahler, of the Kimberly-Clark Company, to whom perhaps, more than to any other one man, is the industry indebted for its technical progress, will discuss "Technical Control in the Pulp and Paper Industry." C. M. Baker, the Association's Engineer, will report on his investigation of the possibilities of waste utilization and stream improvement.

The secretary-treasurer's annual report will be presented, indicating what the Association has accomplished during the past twelve months—Things Done—its financial condition and suggestions for future work.

At the 51st annual banquet the principal speaker will be Judge Marvin B. Rosenberry of the Supreme Court of Wisconsin, who is recognized as an orator, and who is bringing a message of courage and inspiration at this time of hesitancy and uncertainty in business and international affairs. He will be followed by the Rev. Nehemiah Boynton, the association's unofficial chaplain, with his cheery good fellowship and humor.

Bids for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 8, 1928.—The Government Printing Office has received the following bids for 50,000 pounds of white sulphite writing paper in 32 inch rolls; R. P. Andrews Paper Comapny, at 7.87 cents per pound; Dobler & Mudge, 6.05 cents; Virginia Paper Company, 7.87 cents; American Writing Paper Company, 6.53 cents; Old Dominion Paper Company, 6.49 and 5.99 cents; Lindemeyr & Harker, 8.3 cents; Walker Goulard Plehn Company, 6.44 and 6.24 cents; Aetna Paper Company, 6.5 cents; and Reese and Reese, 6.92 cents.

Bids were also received for 33,550 pounds of various sizes white sulphite writing paper as follows; Whitaker Paper Company, at 7.25 cents per pound; R. P. Andrews Paper Company, 8.08 cents; Varton, Duer & Koch Company, 6.55 cents; American Writing Paper Company, 7.25 cents; Old Dominion Paper Company, 6.99 and 6.63 cents; Walker Goulard Plehn Company, 7.04 and 7.5 cents; Aetna Paper Company, 6.74 cents; and Reese & Reese, 9.35 cents.

Dr. Baker Begins New Duties

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 8, 1928.—Dr. Hugh P. Baker, formerly secretary of the American Paper and Pulp Association has begun his work with the United States Chamber of Commerce in connection with trade association activities. Dr. Baker is peculiarly well qualified for this work because of his own experience in this line and he also goes to the National Chamber with an outside viewpoint on how the Chamber can best cooperate with the trade association members.

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COMING EVENTS

Fifty-first Anniversary of the American Paper and Pulp Association. Convention and Meeting of Affiliated Associations, Waldorf-Astoria Hotel, February 20-23. Annual Meeting, Tuesday, February 21. Annual Banquet, Grand Ball Room, Thursday, February 23.

National Paper Trade Association of the United States. Convention, Waldorf-Astoria Hotel, February 20-22. Theatre Party, Selwyn Theatre, "The Royal Family," followed by Supper-Dance at the Cascade, Biltmore Hotel Tuesday, February 21.

Technical Association of the Pulp and Paper Industry. Convention, Waldorf-Astoria Hotel, February 20-23. Annual Banquet, Hotel Commodore, Wednesday, February 22.

Salesmen's Association of the Paper Industry. Annual Meeting, Waldorf-Astoria Hotel, Thursday, February 23. Annual Banquet, Roof Garden, Monday, February 20.

New York Association of Dealers in Paper Mill Supplies. Annual Banquet, Hotel Astor, Wednesday, February 22.

National Association of Waste Material Dealers, Annual Banquet, Hotel Astor, Wednesday, March 21.

FOREMANSHIP COURSES

A great increase in the number of foreman training courses in practically all lines of industry throughout the country is shown in a survey report just issued by the Department of Manufacture of the Chamber of Commerce of the United States. The number of foremanship courses, the bulletin shows, has grown from 105 in 1925 to 933 in 1927. These figures, the Chamber's Department of Manufacture points out, indicate that foreman training is looked upon as an agency for greater efficiency in manufacturing.

Most of the increases in foremanship courses last year were in the larger industrial states. The utstanding increase for the year were recorded in Connecticut, Michigan and West Virginia. The first state increased from 3 to 46; the second from 5 to 73; and the last from 4 to 43.

Virtually every line of industry is represented in the foreman training movement. The machinery group, not including transportation equipment, has the largest number of courses. On the basis of the number of workers employed, however, the rubber products and chemicals and allied products are far in the lead. During 1927 twenty-seven courses were conducted in paper and allied lines.

"The phenomenal growth of foreman training courses," the bulletin says, "offers encouragement to those who appreciate the great value of human efficiency in American industry and are giving these efforts sympathy and support.

"No attempt has been made to evaluate types of courses nor to suggest standards. Those who have them in charge have used initiative to get results, with due regard to the conditions to be met.

"The great increase in courses within the short period from 1925 to 1927 bears eloquent testimony to the fact that today industry regards the trained foreman as a most important factor in management.

"The greater use of intricate and expensive machinery requires not only better trained attendants but better selected and equipped foremen to lead the personnel for more effctive production."

Foreman training courses are being carried on by individual manufacturers, state universities, industrial vocational agencies, chambers of commerce and manufacturer's associations. Such work can be profitably conducted in any community having industrial plants.

DOES RESEARCH PAY?

About five years ago in New England a live and representative group of business men in non-competing lines organized among themselves a research association. Eleven companies comprised the group which included a machine tool builder, a publishing house, a chain cotton mill owner, a tanner, a textile machinery house, a rubber goods manufacturer and several others. The annual value of their combined products totals more than one hundred and fifty millions of dollars. They pool business information and exchange intimate facts about their methods and costs. They are candid about their errors and shortcomings. Their staff members compare notes with one another, they make rounds of inspection of one another's places of work. Profitable ideas came from facts in the possession of the team members which are assembled for the common good. An irrefutable illustration of the value of this research plan is found in the experience of two members who, after a report of one sub-committee on internal transportation problems, effected a saving of $35,000 a year in each case.

There can hardly be found a stronger argument for organized fact finding, cooperating for new knowledge and mutual help in its application.

This interesting research experience was described by Meyer Bloomfield, Consultant of the Policyholders Service Bureau of the Metropolitan Life Insurance Company at the annual dinner of the Attleboro, Massachusetts, Chamber of Commerce. During his talk Mr. Bloomfield defined research as the most vital word in our language, representing the most dynamic of all organization and economic functions. Research in business is another application of the modern idea of keeping individuals and communities well as practiced by many of today's leading physicians, who are devoting their services to prolonging the lives of the healthy as well as treating the ailing,.

It has been the mistaken conviction of some manufacturers that research is a luxury and an overhead that undoubtedly did some good for large corporations that could stand the expense. The dramatic research work and the accomplishments of large concerns has somewhat tended to obscure the fact that science and the methods of science are the most democratic of all human instrumentalities, asking ouly to be used. A tremendous amount of data on an almost inconceivable variety of subjects is available and it only remains for the individual, whether a small or large concern, to assimilate it and apply it to specific problems.

The value of research in the conduct of business is emphasized

when one considers that today three types of business strategy are receiving the greatest attention. They are: The strategy of location; The strategy of unique product, such as that based upon a patent; The strategy of utility and quality. It is the last of these that is arousing the interest of practically all intelligent business men in the face of present day competition. To successfully meet the challenge of business strategy calls, obviously for good management, which may be summarized by the following characteristics: Foresight, that is seeing the problem ahead; Planning, that is, charting an appropriate course of action; Control, the direction of the planned course to the desired end.

The achievement of these three characteristics of good management and making them spell business success, calls for definite knowledge based upon facts. Business men must substitute foresight for hunch, information for opinions, knowledge for gossip, and hard, cold facts for tradition.

American Multitone Claims

[FROM OUR REGULAR CORRESPONDENT]

COHOES, N. Y., February 6, 1928.—Creditors of the American Multitone Papers Corporation, of this city, have been directed by Federal Judge Frank Cooper to file claims against the company with Louis F. O'Neil, of Albany, permanent receiver, by March 15. The order further says in case of failure of creditors to do so all unfiled claims may be disallowed. The case was brought before Judge Cooper recently by Kerr & Hammond of New York, two of the organizers of the concern who sought to recover approximately $40,000 in claims. Several local unsecured creditors were also seeking to recover approximately $9,000 in claims.

The local creditors contested an application of the New York creditors to have Mr. O'Neil named permanent receiver, unless it was agreed by the New York men that claims held by the local unsecured creditors were to be met first. This has been agreed to and Mr. O'Neil was recently named permanent receiver by Judge Cooper. The principal income of the concern is from royalties derived from the patent rights of the company through the Multitone Paper Sales Corporation now located in the old Ogden Mill Building on Ontario street.

The local creditors include the Harmony Mills, Sweet & Doyle Foundry and Machine Company, W. H. Loop Estate and Thomas F. O'Connor, the last named of Waterford. Attorney Edward A. Mealey represents the Harmony Mills, Reginald Brooks, the Loop Estate; John E. McClean, the Sweet & Doyle Company, and Mr. O'Connor appears for himself. The amounts received through royalty payments are to be distributed among the creditors.

Oswego Board Mill Nearing Completion

OSWEGO, N. Y., February 6, 1928.—D. Munson Sutherland, Jr., vice president of the Oswego Board Corporation, whose plant is under construction here, said on a recent visit that while construction and machinery erection forces face a difficult problem it is hoped to have the board mill completed in order to begin production by April 1. He predicted the construction of more factory units during 1928.

Vice President Sutherland explained that since the recent arrangement made by the St. Regis Paper Company with the Johns-Manville Company to market the board manufactured at the local plant more than 1,000,000 square feet has been sold by the selling organization throughout the country and the new product has been well received. The insulating board now on the market is from the Carlisle laboratory at Trenton, N. J., which while not handling mass production is turning out sufficient to handle the introductory business.

"Reports that we are receiving from the Johns-Manville sales force assure us that the new board is going over big and we feel assured of an immediate demand from the building trade throughout the country," Mr. Sutherland said.

National Paper Trade Program

The program for the annual convention of the National Paper Trade Association at the Waldorf-Astoria Hotel in New York, February 20-22, is as follows:

MONDAY, FEBRUARY 20

9:30 a. m. Marketing Committee—Fine Division, Room 117.
10:30 a. m. Executive Committee—Wrapping Division, Room 141.
11:00 a. m. Executive and Administrative Committees—Fine Division, Assembly Room (122).
2:00 p. m. Board of Directors, Assembly Room (122).
3:30 p. m. Import Committee, Room 117.
5:00 p. m. Conference—Gummed Tape Committee and Manufacturers, Room 141.
7:30 p. m. Conference Dinner—Wrapping Division, Banquet Hall. Executive Committee and Manufacturers, First Floor.

TUESDAY, FEBRUARY 21

9:30 a. m. Survey Committee—Fine Division, Room 117.
9:30 a. m. Twine Committee—Wrapping Division, Room 120.
9:30 a. m. Gummed Tape Committee—Wrapping Division, Room 141.
10:30 a. m. Trade Customs Committee—Wrapping Division, Assembly Room (122).
11:30 a. m. Efficiency Committee—Fine Division, Room 117.
11:30 a. m. Tissue Committee—Wrapping Division, Room 141.
2:00 p. m. Fine Paper Division Meeting, Astor Gallery.
2:00 p. m. Survey Committee—Wrapping Division, Room 117.
2:00 p. m. Tissue Conference—Manufacturers and Merchants, Room 141.
8:15 p. m. Theatre Party, "The Royal Family," Selwyn Theatre.
11:00 p. m. Supper Dance, Cascades, Biltmore Hotel.

WEDNESDAY, FEBRUARY 22

9:30 a. m. Wrapping Paper Division Meeting, Astor Gallery.
2:00 p. m. General Meeting entire Association, Astor Gallery.

Changes in Executives

Effective February 1 various changes were made in the official and executive staffs of The Chatfield & Woods Company of Cincinnati and the Union Paper and Twine Company of Detroit.

At Cincinnati directors of the Chatfield & Woods Company have established the office of chairman of the board, and elected H. F. Woods, formerly president of the company, to that office. W. H. Chatfield, formerly vice president, was chosen president of the company. E. H. Shields was re-elected treasurer, and T. H. Scallan, formerly secretary, was chosen vice president. W. C. McLaughlin was chosen secretary and general manager of the company. Stockholders of the company re-elected the board of directors with the exception that D. Y. Johnston, manager of the wrapping paper department of the company, was chosen to W. H. Fillmore.

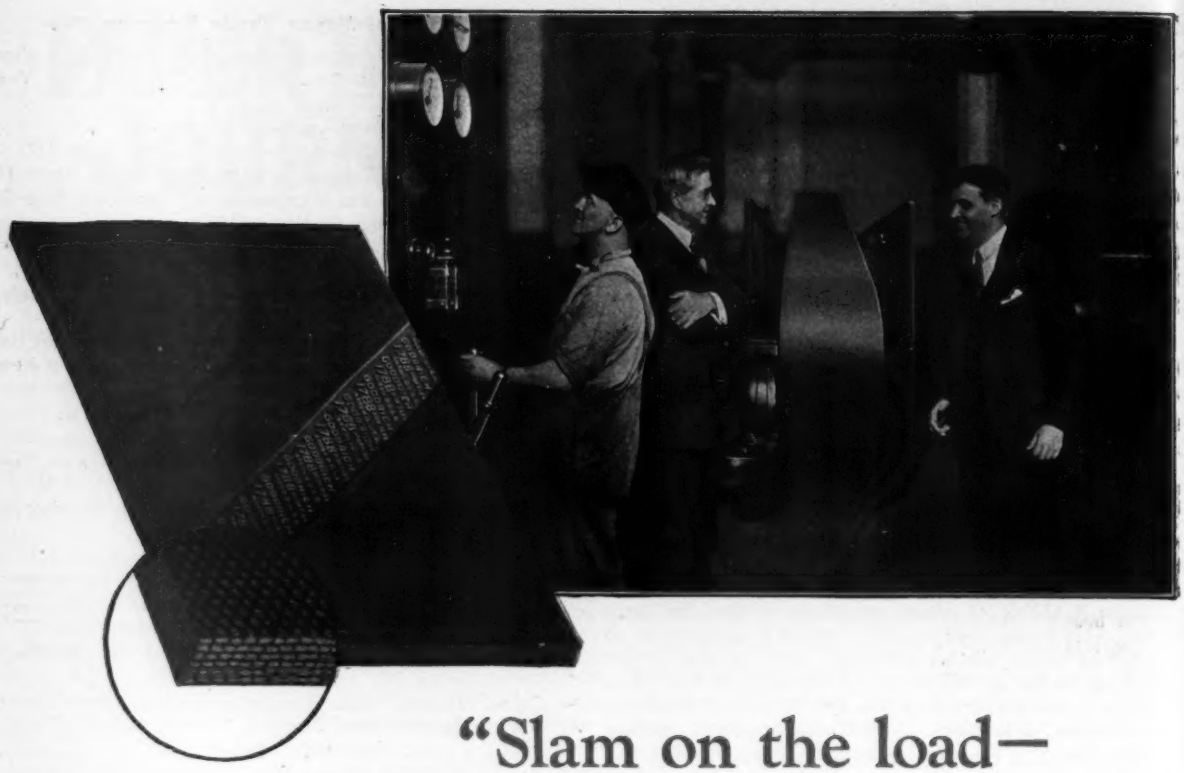
At Detroit W. C. McLaughlin, for the past six years treasurer and general manager of the Union Paper and Twine Company of Detroit, will, on assuming his new duties in Cincinnati, retain general managership of the Detroit company. Charles R. Heeter, formerly sales manager, will be assistant general manager in charge in Mr. McLaughlin's absence. A. J. House, manager of the industrial department of the company, has been elected treasurer.

Find Diamond Set Watch in Rags

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, February 6, 1928.—Employees of the Sorg-Oglesby Paper mills at Middletown the past week found a watch, set with more than a half-dozen small diamonds in a bundle of rags in the beater room. The value of the watch was estimated at $500 by jewelers who examined it.

It will be recalled that several years ago diamonds to the value of more than $1,000 were discovered among the rags in another Middletown mill.



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Bootlegging cannot occur; because, in the case of very slight ply-separation at joint, entrapped air can escape at the edges.

While ideal for small-pulley, high-speed drives, "1788 Highflex" is an all-around heavy-duty belt. Its almost negligible stretch eliminates take-ups and shut-downs.

It's *the* economical, trouble-free belt—and it deserves a test on your most difficult drives!

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No folds in the fabric.
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No ply separation.
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Made of extra-heavy belt duck — 50% less stretch.
Compact weave of fabric gives better anchorage—fasteners won't pull out.
Not affected by atmospheric changes.
Longer life.

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Edited by
RONALD G. MACDONALD, Secretary

Pentosans in the Sulphite Cooking Process*

By L. P. Thereboff

In a previous article[1] I pointed out that all attempts to clarify the sulphite cooking process by investigating the sulphite liquors are bound to result in failure, because of the complex constitution of wood; because of the various directions along which wood may be decomposed depending upon varying cooking conditions and upon the extent of decomposition, and, finally, because of the possibility of secondary reactions in the liquor as the various parts of the wood pass into solution.

Even the method which employs the separation of lignosulphonic acids from the liquor by means of β-napthylamine, which has replaced the older method of fractionation by precipitation with lime or by solution of the solid residue of the liquor,—does not yield and, probably, cannot yield firm grounds for the elucidation of either the cooking process, the composition of lignin, or the manner of attachment of the various ingredients of the wood to each other.[2]

It is essential to study the reaction between the cooking acid, i.e. the bisulphite and the free SO_2, with each of the ingredients of the wood and under conditions as exist in the sulphite cooking process.

As soon as we shall have a clear picture of the reaction with regard to each component part of the wood, then it will be possible and necessary to study the cooking process under specially arranged conditions, taking into consideration the results obtained from the investigation of the separate parts of the wood.

Hemi-Celluloses in Wood

The work here described was undertaken in accordance with the above point of view. This is the first of a series of investigations which are planned on hexosans, lignin and others.

The reasons for beginning this work with pentosans rather than with lignin are as follows:

In the first place, we know a little about the reaction between lignin and the cooking acid, but know nothing regarding the action of the acid upon the hemi-celluloses.

Table I indicates the relative importance of the hemi-celluloses and of lignin in wood.

Here we see that the hemi-celluloses represent as big a portion of the wood as does lignin, the former being greater in the deciduous woods, while lignin is more abundant in the conifers. Therefore, the hemi-celluloses deserve as much attention of the investigator as does lignin. In the table, deciduous species are listed along with the conifers, because they are becoming of growing importance in the supply of chemical wood pulp.

The pentosan content in our spruce also varies considerably, between 10 and 12 per cent, i.e. the ratio is 1 part of pentosans to 2½ to 3 parts of lignin.

In spite of the considerable content of hemi-celluloses, their behavior during cooking has never been investigated. This is the more surprising when one considers that the hexoses of sulphite liquor have been serving already for some time as a source for the production of alcohol.

TABLE 1

No.	Kind of wood	Hemi-celluloses: Total	Pentos.	Hexosan.	Lignin	Authorities
		%	%	%	%	
1	Birch	30.47	25.86	4.61	23.27	König u. Becker
2	Birch	29.01	24.01	5.00	26.38	König u. Becker
3	Beech	28.66	24.30	4.36	22.69	König u. Becker
4	Beech	....	25.88	....	22.46	Schwalbe u. Becker
5	Poplar	....	24.22	....	18.24	Schwalbe u. Becker
6	Poplar	25.31	22.71	2.60	22.75	König u. Becker
7	Poplar	25.26	21.83	3.43	20.75	König u. Becker
8	Silver fir	25.06	11.48	13.58	29.17	König u. Becker
9	Silver fir	21.37	11.63	9.74	27.98	König u. Becker
10	Fir	23.58	10.80	12.78	29.52	König u. Becker
11	Fir	....	13.25	....	26.35	Schwalbe u. Becker
12	Spruce	....	14.30	....	28.29	Schwalbe u. Becker

Hemi-cellulose Reactions Not All Hydrolysis Effects

Perhaps the very fact that hexoses capable of fermentation are found in the liquors has suggested the thought that all the reactions of the hemi-celluloses in the digester amount to simple hydrolysis by the action of free SO_2, which results in free hexoses and pentoses in the digester. The following facts indicate that this view is far from being correct.

Koch, by hydrolyzing wood, which was previously treated with cold acid and alkali, by the action of water at 150-215°, has found among the products of the hydrolysis, mannose, glucose and fructose, but no arabinose and no xylose. Consequently, the hydrolysis of the pentosans takes place more easily and goes further than is the case with hexosans.

Therefore it is possible that in the digester the hexosans react later (which is also affirmed by Hägglund) when the temperature rises and the bisulphite content decreases, which in turn may bring about a difference in the reactions of the various carbohydrates.

We have seen above, that in the wood of the conifers there are approximately equal amounts of pentosans and hexosans; this is

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* Bumazhnaia Promyshlennost, 6, No. 7, 387-404 (July, 1927). Translated by M. L. Caust, Member TAPPI.

[1] "Basic Problems of the Sulphite Process," Bum. Prom., 2, No. 1, 141-143.

[2] One need only compare the various conclusions arrived at by the investigators who have employed this method, which is undoubtedly better than the older methods: Dorée and Hall (Soc. Ind., 43, 257, 1924); P. Klason (Pulp and Paper Magaz., 1926); E. Hägglund (Cell.-Chem., 6, 29, 1925), and Dorée and Hall (Soc. Ind., 44, 270, 1925).

also confirmed by other analyses, while in the liquors we find the following amounts of carbohydrates.

	Hägglund	Krause	Klason
Pentose	30.0	29.0	26.9
Mannose	43.0	32.0	15.6
Galactose	2.6	0.7	8.1
Fructose	2.8	16.6	...
Glucose	...	...	49.4
Undetermined	21.6	21.7	...
	100.0	100.0	100.0

I.e. we find only 27-30 per cent of pentoses, while the other—approximately 20 per cent—are not found in the liquors.

Krause[3] has determined that when the liquors are boiled with dilute acid their sugar content increases, by 18 per cent in the Mitscherlich process and by 43 per cent in the Ritter-Kellner process. What is the source of the sugar? Is it due to further hydrolysis of the dissolved lignin-carbohydrates compound? Or is it perhaps due to the breaking up of compounds of carbohydrates with bisulphite?

Thus we see that a series of questions, even relatively simpler than those involving the formation of simple sugars in the liquors, cannot be answered without a detailed investigation of the reaction between the cooking acid and the hemi-celluloses, particularly the pentosans.

The second reason for commencing the separate cooks,—i.e. with the individual separated ingredients of the wood,—with the hemi-celluloses was as follows.

Already thirty years ago, in my first investigation of the sulphite process, I have established the fact that the so-called Mitscherlich Test indicates the amount of bisulphite in the acid only during the first stages of the cooking; later on it gives the SO_2 which is combined with the organic substances of the liquor in an unknown way, and which separates from the combination by the action of NH_4OH as a monosulphite.

The amount of bisulphite in the digester rapidly decreases to nothing, while the amount of SO_2 which has combined with the organic substances increases until it exceeds not only the bisulphites, but also the total amount of SO_2 in the liquor which is determined by titration with iodine.

In Table II specific figures are cited.[4]

TABLE 2

Temperature in digester	Grams SO_2 in one liter of the liquor (titrated with iodine) Total SO_2	Combined SO_2	Grams combined SO_2 per liter after action of ammonia	Solid residue per liter of liquor	Total sulphur calculated as SO_2 per liter of liquor
112	31.5	21.2	11.3	...	...
110	11.9	5.8	6.4	...	...
127	10.9	2.0	6.8	...	...
130	10.5	1.0	6.3	...	...
130	8.1	0.0	7.1	...	...
131	6.9	0.0	7.3	...	...
131	6.9	0.0	7.3	...	...
129	5.9	0.0	7.1	80.7	16.4
128	5.4	0.0	7.1	91.8	17.8
126	4.5	0.0	6.9	96.4	18.8
126	Not determined	0.0	7.1	...	...
126	0.8	0.0	2.8	112.8	20.8

It is seen in this table that the amount of SO_2 which passes into the unknown condition, but which is liberated again through the action of NH_4OH reaches during cooking the significant figure of 11-15 per cent of the total amount of sulphur in the liquor.

It would seem of interest to determine whether or not the hemi-celluloses with their large amount of hydroxyl and carbonyl groups participate along with lignin in the formation of these unstable compounds. This problem also can be solved by the separate cooking of hemi-celluloses with the cooking acid.

Separate Cooks of Hemi-celluloses

These are the grounds which have led the author together with V. A. Makoshin to commence experiments involving separate cooks of hemi-celluloses, particularly pentosans.

Since in the cooking acid we have both free sulphurous acid and calcium bisulphite, the action of which on the pentosans may be different, it is evident that along with the cooking acid experiments it would be necessary for comparison to make a cook with sulphurous acid alone, which was done in a series of experiments.

The raw material for obtaining the pentosans was aspen wood. Its analysis gave the following results:

Moisture	10.66%
Ash	0.54%
Pentosans	22.00% (by Tollens' method)

The separation of the pentosans was accomplished by the method of Salkowsky involving extraction with alkali, followed by precipitation with Fehling's solution and by decomposition of the precipitate with muriatic acid. In spite of the fact that the precipitate was thoroughly washed, its analysis gave only 82.40 per cent pentosans. On treating the precipitate with alcohol during several months the pentosans content was raised to 90.57 per cent. Further purification with pure alcohol raised the pentosan content to 91.50 per cent. Subsequent extraction with ether and alcohol lasting a month raised the pentosans to 94.82 per cent, where we stopped.

From the 1207 g. of wood taken (bone dry), we obtained 90 g. with 12.09 per cent moisture, which represents only 6.55 per cent of the amount taken.

Analysis of the purified product gave the following results:

Pentosans	92.02%
Methylpentosans	2.80%
Ash	0.69%
Lignin (by diff.)	4.49%

From the ash content it is already evident that the pentosans obtained by us are purer than those obtained by Salkowsky, in which there was from 1.25 to 2.25 per cent ash.

Analysis of the "Lignin"

It seemed of interest to determine what the remaining 4.5 per cent represented, which were so difficult to separate from the pentosans. The supposition that part of the pentosans is combined with lignin was checked up by analysis for lignin.

This analysis was performed by the methods of König, of Willstätter and of Zeisel (by the determination of the methoxyl number), since no single method can be considered absolutely exact.

Determination by König's method gave	5.71%
Determination by Willstätter's method gave	3.04%
Determination by Zeisel's method gave	5.03%

The average of the above is 4.59 per cent, which is very close to the amount obtained by difference (4.49 per cent).

The pentosans showed no copper number.

These were the pentosans with which the entire experimental work was conducted; 21 experiments were made with cooking acid and 10 experiments with sulphurous acid alone without any bisulphites.

In each experiment we took between 4 and 5 decigrams of pentosans. The cooking was done in sealed glass tubes, all tubes of one experiment being placed in the same kettle so as to be cooked under the same conditions. It is never safe to rely upon a single experiment, therefore, each cook was done in duplicate.

The duplicate experiments indicate that some of the cooks gave identical results.

The cooking acid which was used in the first experiments, taken from the Sokol mill, was sufficiently pure and showed no reaction for selenium. However, when at 136-137° C there was a sudden break in the reaction, we suspected that selenium might be present and so used in the following experiments only acid prepared in the laboratory from pure bisulphite and technical sulphuric acid.

On obtaining the same results with this acid we again suspected that a trace of selenium may have been present in the sulphuric acid. New experiments were, therefore, conducted with acid prepared from pure bisulphite and chemically pure sulphuric acid.

The results of these experiments are shown in Table III.

[3] Chem. Industrie, 29, 217 (1903).
[4] L. P. Zhereboff—"The Chemistry of the Sulphite Process," p. 105 (1894).

The first column gives the amount of material taken for the experiment (bone dry).

The second column shows the amount of pure (100 per cent) pentosans in the above material as calculated from the analysis already cited.

Columns 3, 4 and 5 refer to the acid taken, column 3 giving the strength of the cooking acid.

In column 4 we have the amount of this acid taken, in cubic centimeters, and in column 5 is stated the amount of SO_2 in grams.

Since the cooking acid contained a certain amount of sulphuric acid, we determined the sulphuric acid as shown in column 6, experiments 11, 13, 18 and following, where it has significance.

Column 7 gives the cooking temperature; column 8 gives the cooking time in hours.

Columns 9 and 10 show the acid content after cooking. After cooking there was obtained a clear liquid, sometimes having a sediment, and at times containing gypsum crystals. Occasionally there were formed besides the crystals an insignificant amount of flakes.

Under "remarks" are stated the appearance and the peculiarities of the contents of the tubes after cooking.

At the end of each cook the solution was filtered off and the SO_2 in the solution was again determined. This SO_2 content is given in column 9 in per cent and in column 10 in grams.

By subtracting the amount of acid found after cooking from the amount added (columns 10 and 5) we get the amount of SO_2 which reacted with the pentosans or, in the case of the cooks above 135°, also the acid which changed to SO_2 forming the gypsum deposit.

In column 11 are given the grams of acid consumed in cooking, while in column 12 the same acid is expressed as a percentage of the pentosans taken from the cook (column 2).

Properties of Pentosans

Examining the table we find that the first effect of the acid on the pentosans is to swell these. However, at 80° C and after 3 hours (expt. 0), or even 4 hours (expt. 4), the pentosans do not dissolve, but only swell.

On raising the temperature to 90° C during the next 4 hours (expt. 4) the pentosans begin to dissolve, i.e. they enter into reaction with the bisulphite. The reaction ends at 95° C during the next 4 hours, attaining the consumption of 39.6 per cent of SO_2 on the weight of pentosans taken (expt. 4).

Thus in experiment 4 the tubes were heated altogether 12 hours, four hours each at 80, 90 and 95° C.

After every 4 hours the tubes were taken out of the kettle, examined and then returned.

It should be noted that the swelling of the pentosans takes place rapidly and forcefully, so forcefully that were such swelling to take place in the kettle there would result such a compression of the tracheid walls as to interfere with the rapid penetration of the solution into the tracheids.

If this does not take place, then it is probably because there are no free pentosans in the wood, the pentosans being more or less firmly combined with the cellulose and lignin and the phenomena observed in our experiments take place only as the wood is hydrolyzed, the pentosans freed and a soluble compound of the pentosans and the bisulphite is formed.

The following experiment (No. 5) shows that at 115° C, 4 hours (and perhaps less) are sufficient for the completion of the reaction.

Nature of the Reactions

At 125° and 135° C the reaction apparently proceeds in the same direction, ending probably in less than 4 hours; the pentosans attach about 50 per cent (48.6, 51.8, 54.5 per cent) SO_2.

Further raising of the temperature of cooking indicated that 136°-137° C is the critical temperature for the formed compound. At this temperature a further quantity of SO_2 is expended, amounting to over 200 per cent on the weight of the pentosans.

However, this compound of bisulphite and pentosans breaks up readily, one product of the decomposition being Ca SO_4.

The visual appearance of the contents of the tubes changes sharply (see Table III).

In experiments 9 to 13 the acid, while remaining transparent, turns from colorless to brown (resembling the cooking liquor from soft cellulose), and contains an inappreciable amount of fine black flakes and a large quantity of a white deposit, which on analysis was found to be gypsum.

TABLE 3
COOKS WITH COOKING LIQUOR (bisulphite + free SO_2)

	Taken for cooking — Pentosans		Taken for cooking — Cooking liquor						In the liquor after cooking		Acid used up in the cook		
Number	Bone dry material in grams	Containing pentosans in grams	Concentration in %	Cu. cm.	Containing SO_2 in grams	Containing SO_2 calculated as SO_2, grams	Temperature of cook, degrees C.	Duration of cook, hrs.	% SO_2	Grams SO_2	Grams	% on weight of pentosans	Remarks
	1	2	3	4	5	6	7	8	9	10	11	12	13
0	.....	.....	4.62	25	1.155	....	80	3	....	....	....	....	Pentosans swelled and slightly browned.
1	0.4394	0.4166	4.62	25	1.155	....	105	3	4.35	1.087	0.068	16.3	All dissolved. The liquor is clear. No deposit.
2	0.4475	0.4244	4.62	25	1.155	....	105	4	4.28	1.070	0.085	20.0	Same.
3	0.4328	0.4104	4.62	25	1.155	....	105	4	4.15	1.037	0.118	28.7	Same.
4	0.4255	0.4035	4.62	25	1.155	....	80	4*	....	....	....	....	Pentosans swelled and slightly browned.
	0.4255	0.4035	4.62	25	1.155	....	90	4*	....	....	....	....	Pentosans partly dissolved. In the undissolved portion white particles ($CaSO_3$) are held.
	0.4255	0.4035	4.62	25	1.155	....	95	4*	3.98	0.995	0.160	39.6	All dissolved. The liquor is clear.
5	0.4428	0.4190	4.62	25	1.155	....	115	4	4.03	1.008	0.147	35.0	No deposit.
6	0.4490	0.4257	4.62	25	1.155	....	125	4	3.79	0.948	0.207	48.6	The liquor is clear. No deposit.
7	0.4434	0.4204	4.45	25	1.113	....	135	4	3.58	0.895	0.218	51.8	Same.
8	0.4362	0.4136	4.30	25	1.075	....	135	4	3.40	0.850	0.225	54.5	Same.
9	0.4448	0.4218	4.35	25	1.090	....	140	4	0.95	0.237	0.850	202.0	The liquor is colored like strong tea. Gypsum deposit and small amount of black flakes are present. Solution clear.
10	0.4454	0.4223	4.35	25	1.090	....	140	4	0.92	0.230	0.860	203.0	Same.
11	0.4705	0.4461	4.35	25	1.090	0.026	140	4	0.88	0.220	0.870	195.0	Same.
12	0.4401	0.4170	4.35	25	1.090	....	140	4	0.82	0.205	0.885	212.0	Same.
13	0.4320	0.4096	4.35	25	1.090	0.026	140	4	0.86	0.215	0.875	213.0	Same.
14	0.4354	0.4129	4.42	25	1.105	....	142	4	0.72	0.180	0.925	224.0	The liquor is black. Scarcely transparent. Deposit like gypsum and a larger amount of black flakes.
15	0.4382	0.4155	4.42	25	1.105	....	142	4	0.82	0.205	0.900	217.0	Same.
16	0.4378	0.4150	4.35	25	1.090	....	145	8	0.31	0.078	1.010	243.0	Liquor is black and opaque. Gypsum and black flakes deposited.
17	0.4257	0.4035	4.53	25	1.132	....	148	8	0.59	0.147	0.985	244.0	Same.
18	0.4440	0.4210	4.53	25	1.132	0.027	148	8	0.41	0.102	1.030	245.0	Same.
19	0.4363	0.4136	5.70	25	1.425	0.024	152	8	3.32	0.830	0.595	144.0	Same.
20	0.4514	0.4280	2.75	25	0.6875	0.024	152	8	0.33	0.082	0.605	141.0	Same.
21	0.3349	0.3349	1.81	40N	0.7240	0.056	150	5	0.385	0.154	0.570	170.0	

* These cooks were made in the same tubes, but they were removed and inspected after 4 hours at 80 degrees C., then after 4 hours additional at 90 degrees C., and again after 4 hours more at 95 degrees C., total time of cooking being 12 hours.

In the remaining experiments we have this same appearance, except that the acid is now altogether black, like ink, and when filtered leaves on the filter a coal-like deposit.

Such a sharp change in the reaction, a change which takes place within a range of 1 or 2 degrees, at a temperature at which in the sulphite cooking process the harmful effect of selenium appears, and with similar symptoms, namely, a darkening of the solution and an enormous separation of gypsum, indeed evoked the suspicion that also here we have selenium present, although, as already stated, the test of this acid for selenium gave a negative result.

A Soda Base Used

The subsequent cooks were, therefore, carried out with acid prepared in the laboratory from sodium bisulphite and technical sulphuric acid (expts. 17, 18, 19) and later (expts. 20 and 21) from pure sodium bisulphite and chemically pure sulphuric acid. However, the results obtained were the same as before and, therefore, the question of the effect of selenium is ruled out.

Consequently, the oxidation of SO_2 takes place at the expense of the oxygen of the pentosans, perhaps at the expense of the oxygen bridge of the pentosans.

When the formation of gypsum in cooks above 136° C was established, we analyzed the contents of the tubes in expts. 11, 13, 18, 19 and 21 in order to determine in what form the SO_2 exists after cooking. The deposit was filtered off and analyzed; the filtrate was also analyzed (see Table IV) for

1) amount of SO_2 entered into the gypsum precipitate;

2) amount of SO_2 in the solution, in an unchanged form;

TABLE 4

Cook No.	Concn. of Acid % SO_2	Duration of Cook in hours	Grams of material taken: Pentosans	Grams of material taken: Total SO_2	Found SO_2 calculated as SO_2: In ppitate	Found SO_2 calculated as SO_2: In Solution	Found SO_2 calculated as SO_2: Total	Remaining in combination with the decomposed pentosans.	Unchanged SO_2 determined by titration	SO_2 combined with the pentosans in % on weight of pentosans.
	1	2	3	4	5	6	7	8	9	10
11	4.35	4	0.4461	1.116	0.283	0.182	0.465 41.8%	0.431 38.6%	0.220	97
13	4.35	4	0.4096	1.116	0.301	0.200	0.501 45.3%	0.400 35.9%	0.215	98
18	4.53	8	0.4210	1.159	0.421	0.217	0.638 55.1%	0.419 36.1%	0.102	99
19	5.70	8	0.4136	1.449	0.153	0.078	0.261 18.0%	0.388 26.9%	0.830	97
21	1.81	5	0.3349	0.780	....	....	0.326 41.8%	0.300 38.4%	0.154	97

1. The lower figures in columns 7 and 8 give the per cent SO_2 calculated on the total SO_2 taken for the cook. The table shows that with the same composition of the cooking liquor and with the same cooking time the percentage is the same.
2. When the composition of the liquor is not the same, the above percentage will depend upon the amount of CaO in the liquor. In these experiments all CaO was changed to gypsum.
3. The amount of SO_2 which remained in combination with the decomposed pentosans or pentoses (No. 21) was always the same, amounting on the average to 97.5 per cent on the weight of the pentosans taken

3) amount of SO_2 in solution as SO_2, and

4) by difference,—the amount of SO_2 present in an unknown form in combination with pentosans and pentoses.

Investigation showed that there was considerable gypsum formed, namely, on an average 24 per cent of the SO_2 was thus used up.

The amount of SO_2 in combination with pentosans after cooking at temperatures between 140 and 152° is constant, on the average about 97.5 per cent of SO_2 calculated on the weight of pentosans taken (Table IV); thus, in expt. 11—97 per cent; expt. 13—98 per cent; expt. 18—99 per cent; expt. 19—97 per cent; expt. 21—97 per cent.

We have already seen that at temperatures between 125 and 135° C the amount of SO_2 entering into combination with the pentosans was 50 per cent on the weight of pentosans taken, while now at 140 to 152° we find that the figure is 97.5 per cent, i.e. twice as much.

We have already pointed out that the sharp change in the reaction, the separation of gypsum and the change in the acid from colorless and transparent to black and opaque with the separation of a coal-like deposit takes place within the limits of only 1 or 2 degrees and 136-137° C is the critical temperature for the decomposition of the compound first formed.

As the temperature is raised above 136° C this compound decomposes rapidly with the formation of gypsum and simultaneous attachment of a new quantity of SO_2 to the liberated bonds.

Discussion of Results

This table shows us that up to 80° there takes place only a swelling of the pentosans, but 4 hours of cooking at 90° does not result in a combination with the bisulphite so as to form a soluble compound.

This compound, giving a transparent colorless solution, contains approximately 25 per cent SO_2 on the weight of pentosans.

When the cooking is done at 125°, but the duration of the cook is 4 hours as before, there is also obtained a transparent and clear solution, however the compound now contains 50 per cent SO_2 on the weight of the pentosans (expts. 6, 7, 8).

The same result is obtained at temperatures between 90 and 115°, but requiring more time,—approximately 12 hours (expts. 4 and 5).

At 136-137° there takes place a rapid decomposition of this compound accompanied by separation of gypsum, and the SO_2 content in the newly formed compound is 97.5 per cent, calculated on the weight of pentosans taken. After this there are no more pentosans, as the separation of the coal-like deposit is the result of their destruction.

What do these amounts of 25, 50 and 97.5 per cent show?

The molecular weight of pentosans $(C_5H_8O_4)_n$ equals 132n. The molecular weight of SO_2 equals 64, and in the bisulphite containing twice SO_2, the SO_2 entering the reaction equals 126, i.e. in the liquor we apparently have two combinations with the bisulphite, depending upon the length of time of cooking; in the first compound n of the pentosans equals 4, in the second, more stable compound, $_n = 2$.

Compound	SO_2 calculated on the pentosans	Found
$Ca(HSO_3)_2 + (C_5H_8O_4)_4$	24.24%	24.35%
$Ca(HSO_3)_2 + (C_5H_8O_4)_2$	48.48	51.43
$2Ca(HSO_3)_2 + (C_5H_8O_4)_2$	96.96	97.50

The insufficient stability of the first compound and its change into the second explain the considerable variations encountered in the analyses, however observations made during the cooks permit the hope that with certain changes in the experimental procedure conditions conducive to its greater stability may be created.

At 136-137° C, besides the formation of gypsum as a result of the destruction of a pentosan molecule, SO_2 remains combined with the organic remnant, the quantity being 97.5 per cent on the weight of pentosans taken; i.e. we witness not just the destruction of a pentosan molecule, but also of the pentose.

The SO_2 is combined with some unknown product of decomposition of the pentoses.

A special experiment corroborated this. The product of a cook above 140° (expt. 18) already showed no furfural.

We also performed an experiment with pentoses obtained by hydrolysis of our pentosans (expt. 21).

Formation of Gypsum

The result of the cook was the same. Cooking at 150° for 5 hours we obtained the same decomposition of the pentose molecule with the separation of gypsum.

This unexpected fact was of considerable interest to me. In my early experience in sulphite mills I have observed that a large amount of gypsum formed during cooking. The cooking was then done with Sicilian sulphur, so that there could not have been any selenium present.

That gypsum was formed was also noted by other observers,

TABLE 5
COOKS WITH FREE SULPHUROUS ACID

No.	Taken for cooking: Pentosans: Bone dry material in grams.	Pentosans: Pentosans in grams.	Acid: % SO_2	Acid: Cu. Cm.	Acid: Grams SO_2	°C	Duration of cook in hours.	In the liquor after cooking: % SO_2	In the liquor after cooking: Grams SO_2	Consumed: % SO_2	Consumed: Grams SO_2	% SO_2 consumed on weight of pentosans.	Remarks
	1	2	3	4	5	6	7	8	9	10	11	12	13
1.	0.4317	0.4093	1.37	25	0.3425	100	3	0.99	0.2475	0.38	0.095	23.3	All dissolved. Liquor transparent
2.	0.4391	0.4163	1.37	25	0.3425	104	3	0.95	0.2375	0.42	0.115	27.2	Same.
3.	0.4457	0.4226	1.37	30	0.4111	100	4	0.94	0.2820	0.43	0.129	30.5	Same.
4.	0.4504	0.4271	1.37	25	0.3425	115	3	0.97	0.2425	0.40	0.100	23.4	Same.
5.	0.4368	0.4142	1.37	25	0.3425	115	3	0.95	0.2325	0.42	0.110	26.5	Same.
6.	0.4422	0.4193	0.86	25	0.215	135	4	0.50	0.126	0.36	0.090	21.6	Liquor colored like strong tea.
7.	0.4598	0.4360	0.85	25	0.212	135	4	0.37	0.092	0.48	0.120	27.6	Same.
8.	0.4304	0.4081	0.86	25	0.215	140	4	0.31	0.078	0.55	0.137	33.5	Liquor black and opaque.
9.	0.4298	0.4075	0.85	25	0.212	145	8½	0.18	0.045	0.67	0.167	41.0	Same.

but no explanation was advanced; later on, when pyrites was used, selenium was also blamed.

The present experiments indicate that at 136-137° gypsum is unavoidably formed as a result of the decomposition of the pentosan molecule which is combined with the bisulphite. It remains to be established whether or not the same process will take place on cooking at lower temperatures, but for longer periods of time.

Effect of Free SO on Pentosans

Along with the cooks employing acid of the usual composition, we also made several cooks with sulphurous acid containing 0.85 to 2.00 per cent SO_2, in order to study the effect of free sulphurous acid upon pentosans.

As before, the duration of the cooks was varied between 3 and 8 hours.

The temperature was varied between 100° and 152° C. for the various cooks.

The conditions and the results of these cooks with free SO_2 are shown in Table V. A comparison of this table with Table III leads us to the following conclusions:

Free SO_2 reacts with pentosans more rapidly than does bisulphite, since in cooks lasting 3 to 4 hours and at 100 to 104° C, the pentosans have taken up on the average 27 per cent of SO_2 in the former case against 22 per cent SO_2 from bisulphite. It is probably for the same reason that browning of the acid takes place at 135° C when free SO_2 is used.

In cooks below 136° C only half as much SO_2 is consumed as when bisulphite is used. At temperatures from 100° to 135° inclusive there is always the same amount of SO_2 used up, namely 27.5 per cent.

We have already seen that with bisulphite at 125°-135° C the pentosans take up on the average 51.6 per cent SO_2.

Within the limits of 0.85 to 1.37 per cent employed in these experiments, the strength of the acid has apparently no effect either upon the speed of the reaction or upon the composition of the compound, which represents a direct addition of SO_2 to the pentoses which are a part of the pentosan molecules; this molecule now consists only of two pentoses and not of four as when starting out with bisulphite.

In the absence of bisulphite the pentosan molecule consisting of four members, apparently is immediately hydrolysed into a two-member molecule. The same, so to speak, protective action of the bisulphite is apparent in the cooks with the regular cooking acid (Table III, Nos. 1-18).

Also here in the presence of 2.61 per cent free SO_2 (the acid employed in cooks Nos. 1-6, contained 4.62 per cent total SO_2, 2.61 per cent free and 2.01 per cent combined), we observe that the attachment of SO_2 is double that which takes place when, under similar conditions, only sulphurous acid is used; moreover, the amount taken up corresponds to the formula cited above (found 48.48 per cent, required by formula 51.43 per cent).

However, prolonged cooking at a temperature above 136° and in the presence of free SO_2 apparently causes the decomposition of the pentosan and the destruction of the pentose molecule; this is seen in experiments 8 and 9 where the amount of SO_2 taken up is greater and where a carbonaceous deposit separated.

Results Using a Magnesium Base

In recent times they have been paying considerable attention to the effect on sulphite cooking of various bases when used either in place of CaO or alongside with it. It, therefore, appeared interesting to determine how different would be the action of bisulphite upon the pentosans if CaO were replaced either entirely or partly by MgO.

Two cooking acids were prepared: in the first the bases were in the ratio of 30 per cent MgO and 70 per cent CaO (the approximate composition of dolomite); in the second only magnesium was used.

TABLE 6

COOKS WITH $Ca(HSO_3)_2+Mg(HSO_3)_2$ AND WITH MAGNESIUM BISULPHITE ALONE.

No.	Taken for cooking: Pentosans: Bone dry material in gms.	Pentosans: Containing gms. of pentosans	Cooking liquor: Concn. in % SO_2	Cooking liquor: Cu. cm.	Cooking liquor: Containing gms. SO_2	Cooking liquor: Containing SO_2 calculated at SO_2, gms.	Temperature of cook, degrees C.	Duration of cook in hours	SO_2 in liquor, gms., by titration after cooking	Consumed SO_2: Gms.	Consumed SO_2: % on pentosans	Composition of bisulphite	Remarks
	1	2	3	4	5	6	7	8	9	10	11		13
1	0.4443	0.4213	5.58	25	1.395	0.036	144	4	0.410	0.985	234	MgO— 30%	Liquor darkened less than with $Ca(HSO_3)_2$ alone. Gypsum precipitated.
2	0.4481	0.4249	...	..	....	....	...	..	0.398	0.997	235	CaO— 70%	
3	0.4444	0.4214	5.45	25	1.362	0.0501	144	4	0.385	0.997	232}	MgO—100%	Liquor totally transparent; lighter color than Nos. 1 and 2.
4	0.4426	0.4197	...	..	....	....	...	..	0.377	0.985	235}		

Cooks were made with these acids under the same conditions as with calcium bisulphite. The results of these cooks are given in Table VI.

This table shows that when magnesium is either entirely or partially substituted for calcium in cooks conducted under similar conditions for 4 hours and with acids of the same strength, the substitution does not prevent the oxidation of the bisulphite by the oxygen of the pentosans and it does not reduce the consumption of sulphurous acid for the removal of the pentosans from wood in the cooking of cellulose.

However, it should be noted, that outwardly there is a difference. Thus in cooks Nos. 1 and 2 the acids were not darkened quite as much as when calcium bisulphite was solely employed, although large crystals of gypsum separated also here.

Where only magnesium bisulphite was used (cooks Nos. 3 and 4) the liquor remained absolutely clear and was only slightly colored. We made a colorimetric comparison of this liquor with that of the previous 2 cooks where a mixed base was used and we found that the latter were colored 40 times more strongly. This fact leads one to suppose that Mg $(HSO_3)_2$ does not cause the pentose molecule to break up quite as much os does $Ca(HSO_3)_2$.

In order to determine the amount of SO_2 that combined with the pentoses in the cooks with magnesium bisulphite, we analyzed the contents of the tubes in the four experiments for SO_2 so as to have a complete account of SO_2. The results are given in Table VII.

TABLE 7

	Taken for cooking				Found after cooking				Attached to pentosans	
Cook No.	Pure pentosans in grams	SO_2 in grams	SO_2 as SO_2	Total SO_2	Gms. unused SO_2 by titration	SO_2 as SO_2 in solution and precipitate	Total SO_2 in grams	Gms. SO_2	% SO_2 on pentosans taken	Composition of bisulphite
1	0.4213	1.395	0.036	1.431	0.410	0.574	0.984	0.447	106	MgO— 30%
2	0.4249	1.395	0.036	1.431	0.398	0.593	0.991	0.440	103	CaO— 70%
3	0.4214	1.363	0.050	1.413	0.385	0.590	0.975	0.438	104	MgO—100%
4	0.4197	1.363	0.050	1.413	0.378	0.594	0.972	0.441	105	MgO—100%

Analysis showed that the bisulphite was oxidized just as strongly when magnesium was used in place of calcium.

The amount of sulphurous acid entering into combination with the products of decomposition of the pentosans is about the same irrespective whether magnesium or calcium bisulphite is used.

With $Ca(HSO_3)_2$ it amounts to 97.5 per cent on the weight of the pentosans taken, while for $Mg(HSO_3)_2$ it averages 104.5 per cent.

Action in the Digester

In these investigations only free and pure pentosans were employed. The question arises: Does the reaction proceed in a similar manner in the digester, where the pentosans are in combination with the other constituent parts of the wood, namely, cellulose and lignin?

Another question remains unanswered: Will all of the pentosans present in the wood react in the same way as was true in these experiments?

From the aspen wood which contained 22 per cent pentosans we extracted only 6.55 per cent, or, allowing for losses, about 1/3 of the total pentosan content. The remaining 2/3 were more strongly combined with the cellulose and lignin. Whether the remaining 2/3 of the pentosans will react in the same manner with bisulphite when instead of a weak alkaline hydrolysis a more energetic acid hydrolysis is substituted will be determined in subsequent experiments.

Cause of Formation of Unstable Compounds

We have mentioned in the beginning that one reason for studying the action of bisulphite on pentosans was our desire to determine whether it is the pentosans that form those unstable compounds with bisulphite which we find in the liquor already 2 to 3 hours after commencing the cook, which constantly increase during the cook and decrease only at the very end of the cook.

The quantity of these compounds, disclosed on addition of ammonia, is seen in Table II to be quite large. They contain 15 to 20 per cent of the total SO_2 which entered into reaction with the wood.

As a check, the control tubes which contained the product of the reaction between the bisulphite and the pentosans at 115-125°, were treated with NH_4OH and the amount of combined SO_2 was determined before and after the treatment.

The experiments showed that the pentosans do not form these compounds. Apparently, it is either the lignin or, perhaps, the hexosans that form the unstable compounds with bisulphite. (Prof. P. Klason has repeatedly pointed out that part of the SO_2 is in feeble combination with lignin.) Further experiments should also answer this question.

Summary

The principal conclusions of the present work as as follows:

1. On being heated with cooking acid above 80° C pentosans form a compound with calcium bisulphite in which one molecule of the bisulphite is attached to a pentosan molecule consisting of 4 pentose remnants.

2. On raising the temperature to 136°, more $Ca(HSO_3)_2$ is taken up resulting in a more stable compound in which one molecule of $Ca(HSO_3)_2$ is combined with 2 pentose remnants.

3. The basic pentosan unit $(C_5H_8O_4)_n$ should therefore be regarded as having $_n$=4; on further hydrolysis this breaks up into two parts, where $_n$=2.

The structure of pentosans apparently is analogous to that of cellulose containing two cellobioses.

4. As the temperature is raised above 136-137° there takes place a rapid decomposition of the compound $Ca(C_5H_8O_4.SO_2)_2$ where the pentose is destroyed and the SO_2 is oxidized at its expense to SO_3; at the same time $Ca(HSO_3)_2$ is changed to gypsum.

5. In case there is not enough lime in the cooking acid, free sulphuric acid is formed.

6. At 136-137° the pentose molecule is completely destroyed and a carbonaceous deposit formed. The products of the decomposition no longer give furfural.

7. Free sulphurous acid without bisulphite reacts more rapidly than does bisulphite; however, when bisulphite is present its attachment to the pentosans precedes the reaction with free SO_2.

8. On cooking with bisulphite, the compounds resulting from decomposition of the pentoses contain one molecule of SO_2 for each pentose molecule which entered into reaction.

9. The action of bisulphite differs strongly from that of free SO_2.

10. No essential change in the reaction follows the replacement of lime with magnesium oxide; at the end of the cook the bisulphite which is at first taken up is split off again as $MgSO_4$; however, the pentosans are not destroyed to the same extent as when calcium bisulphite is used.

11. The formation of gypsum in the cooking kettle depends to a considerable extent, if not entirely, upon the decomposition of the compound formed at the start of the cook between bisulphite and pentosans.

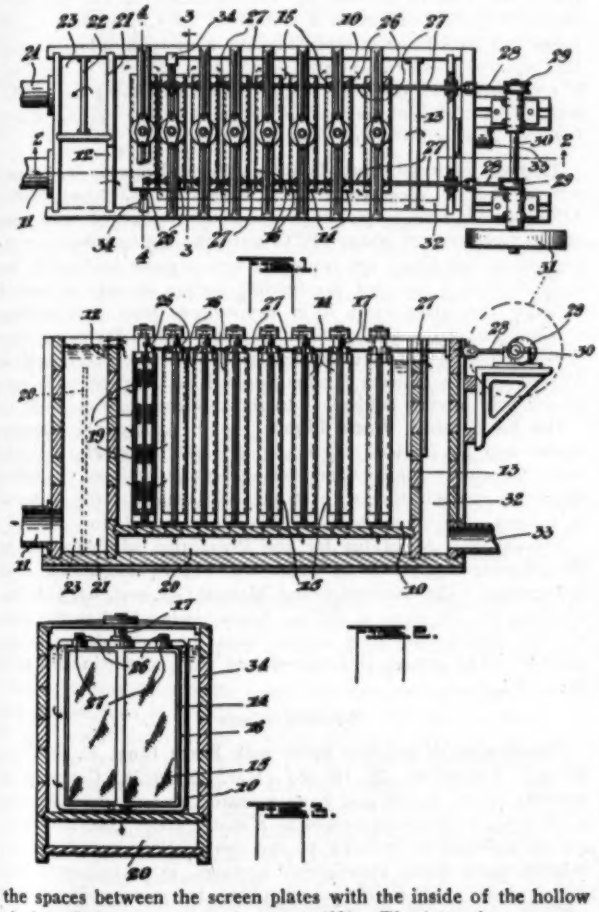
12. The formation of an unstable compound from the bisulphite and the organic substance in the wood, which breaks up with separation of $CaSO_3$ on treatment with ammonia or with separation of SO_2 on heating with mineral acids, is the result of the attachment of bisulphite to lignin or to hexosans; the pentosans form no such compound.

The Dickinson Pulp Screen

J. A. Dickinson, of the Brompton Pulp and Paper Company, East Angus, Que., has devised simple pulp sereen of large capacity, for which he was granted U. S. patent No. 1,639,797 (Aug. 23, 1927). The following is a description of the device.

Fig. 1 is a plan view of the screen; Fig. 2 is a section on the line 2-2 of Figure 1; Fig. 3 is a section on the line 3-3 of Figure 1; Fig. 4 is a section on the line 4-4 of Figure 1; Fig. 5 is a section on the line 5-5 of Figure 4; Fig. 6 is a section on the line 6-6 of Figure 4 showing the screen in its central position; Fig. 7 is a cross sectional view showing the screen in eccentric position.

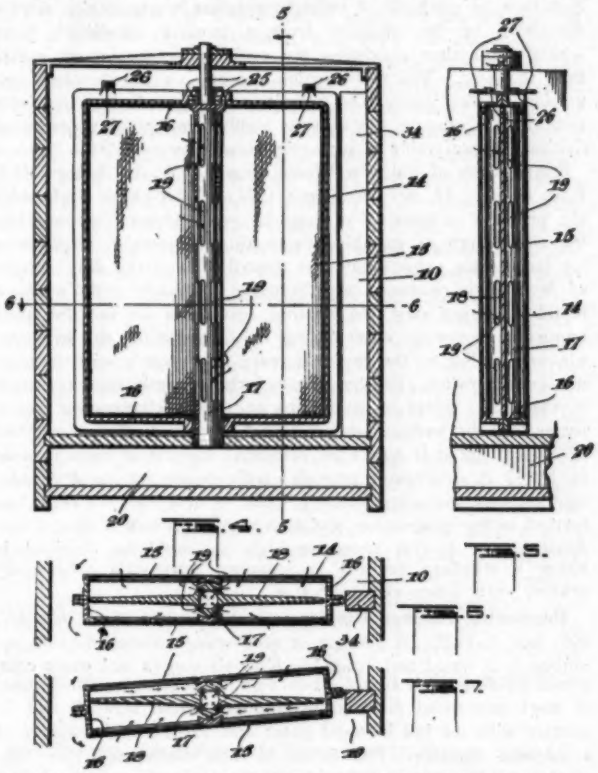
In the vat (10), provided with inlet pipe (11), is a weir (12) at one end an overflow weir (13) at the other end. Between these weirs there is a series of screening units (14), comprising screen plates (15) mounted in pairs on a frame (16), the frame being closed in between the screen plates on all sides. Inside each frame is rigidly mounted a hollow vertical shaft (17), fitted with rigid baffles (18) and equipped with ports (19) connecting



the spaces between the screen plates with the inside of the hollow shaft and thence to a compartment (20). The latter in turn communicates with the regulating chamber (21), having an adjustable regulating weir (22) over which the screened stock is discharged into compartment (23), from which it is discharged through a pipe (24).

The frames (16) are mounted on bushings or bearings (25) carried on the upper part of vertical shaft (17), which provides a pivot on which each frame or screen unit is carried. Near the top of this frame on each side are pins (26) on which are mounted side bars or links (27) connecting the screening units together and retaining them at a uniform distance apart. The links (27) are connected by means of rods (28) to eccentric disks or cranks (29) mounted on a shaft (30) and driven by the pulley (31), in turn driven from any suitable source of power.

It is thus seen that screening action is obtained by the difference in the height of the regulating weirs (22) and the overflow weirs (13), and the maximum screening action occurs when the regulating weir is entirely removed, the full head on the screen being



the difference between the overflow weir (13) and the level of the discharge pipe (24). The adjusting of the weir is necessary to suit each kind of stock and to vary the flow through the screens.

An auxiliary screening action is obtained by means of the rigid baffle plates (18) in combination with the oscillation of the screen units. On a forward stroke the space between the screen plate and the baffle is reduced, thereby causing a displacement of water, and on the reverse stroke this space is increased, thereby producing a partial vacuum against the baffle and causing a suction of water through the screen plates, which is of great assistance in pulling the fibers of stock through the screen plates. This condition is double acting on each side of the baffles at each stroke. The arrows indicate the flow of stock through the screen plates and out throught the ports (19).

Tailings or rejections which will not pass the screen plates are carried over the weir (13) into the chamber (32) and discharged through the tailings pipe (33). The position of weir (22) is adjusted to obtain minimum flow over weir (13) so as to ensure thorough screening and elimination of only the rejections over this weir.

The eccentric disk (29) imparts a reciprocating motion to the links (27), which in turn rocks the screening units on their pivots, thereby permitting the liquid to have a flushing action through the slots of the screen plates and making the plates practically self-cleaning.—A.P.-C.

Current Paper Trade Literature

Abstracts of Articles and Notes of Papermaking Inventions Compiled by the Committee on Abstracts of Literature of the Technical Association of the Pulp and Paper Industry

Clarence J. West, Chairman

Sulphite Waste Liquors

Sulphite Waste Liquor Utilization Problems. W. E. Byron Baker. Paper Trade J. 84, No. 22, 77-80 (June 2, 1927). A review of methods of utilizing sulphite waste liquor, with a discussion of the problem from a general standpoint, from which the author concludes the problem is economical rather than technical. The real solution depends on the chemical conversion of the liquor into some types of products extensively needed to accelerate the already highly accelerated progress of civilization, preferably along agricultural lines.—A.P.-C.

Evaporation of Sulphite Waste Liquor. W. L. Badger, Ind. Eng. Chem. 19, 677-680 (June 1927). The paper deals with the problem of disposal of sulphite waste liquors by considering the design of suitable evaporating equipment. Apparatus for large-scale experiments are described, and the data obtained from their operation are discussed. Velocity with which a liquid is moved past the heating surface is by far the most important factor in determining the capacity of the evaporator, and owing to the rapid increase in viscosity with increasing concentration, so that some form of artificial circulation is essential. From a discussion of the mechanism of scale-formation, the author concludes that the most efficient method of combatting it is also high velocity. Results of tests in a 30 in. by 12 ft. evaporator provided with means for rapid circulation showed that after about 150 hrs. of operation no scale had formed in the evaporator, and that the coefficient of heat transmission was several times as high as could be obtained in either a standard vertical or standard horizontal tube evaporator, even when clean.—A.P.-C.

Recovering Sulphur Dioxide. G. A. Richter. Can. pat. 267, 295, Jan. 4, 1927. A process of recovering sulphur dioxide absorbed in a liquid and from hot blow-pit vapors and gases comprises passing such liquid when cold through a confined mass of inert interstitial material in counter-current flow to and in contact with the hot blow-pit gases and vapors discharged from a sulphite digester. The liquid is then discharged from the condenser, the temperature of which is increased for removal of the absorbed sulphur dioxide.—A.P.-C.

Manufacture of a Non-Hygroscopic Pulverulent Product from Sulphite Waste Liquor. I. G. Farbenindustrie A.-G., assignees of A.-G. fur Anilin-Fabrikation. Eng. pat. 250,956 Apr. 15, 1926. The total solid content of the liquor is obtained in a dry non-hygroscopic form either by evaporating the liquor at a temperatue above 100° C., e.g., on a drying drum at 140° C., or by first heating it at a temperature above 100° C. and then evaporating it. Maximum stability of the product in air is obtained by subsequently heating it for a short time at a high temperature, e. g., at 180°C.—A.P.-C.

Recovery of By-Products from Sulphite Waste Liquor. L. Petit-Devaucelle. Fr. pat. 619,861, Dec. 14, 1925. To prepare pitch, the liquor is neutralized with soda ash or lime, evaporated till it contains 10% of water, poured in a steam-jacketed iron kettle where it is mixed with 2 to 10% of gas tar or dry pitch, and heating is continued till all the water has been evaporated. To recover sulphur and resins, the liquor is introduced into a closed vessel, a current of hydrogen sulphide is passed through the liquor to precipitate part of the sulphite in the form of free sulphur, the liquor is separated from the precipitated sulphur in the form of free sulphur, the liquor is separated from the precipitated sulphur and transferred to a vessel heated to 100°C., a small amount of nitric acid is added to facilitate oxidation, and a current of air is passed through, which precipitates the remainder of the sulphites as calcium sulphates and at the same time throws the resins out of solution in the form of a scum which rises to the surface and can be skimmed off. The crude resins can also be precipitated by heating the original sulphite waste liquor in presente of crude salts, (e.g., sodium chloride from the salting of fish, or distilled liquor from the manufacture of soda by ammonia process) and skimming of. The separate crude resins are melted, taking care not to carbonize them, a small quantity of tar or dry pitch is added to polymerize them and the resultant product is suitable for the same uses as tar or pitch. The crude resins can also be purified by hydrogenation in two-compartment electrolytic cell under a voltage of 2.7 v., the crude resins being introduced (after saponification with soda solution) into the negative compartment and a 13% soda solution in the positive compartment, carbon or copper electrodes being used. Alternatively, the crude resins can be purified by melting, filtering and adding 5-10% of rosin.—A.P.-C.

Tanning Material from Sulphite Waste Liquor. V. Drewsen assignor to West Va. Pulp & Paper Co., U. S. pat. 1,629,448, May 17, 1927. Sulphite waste liquor is cooked with lime at a temperature of about 130°C. until the lignosulphonic components of the liquor are converted into organic acids with the formation of a complex precipitate; carbon dioxide is passed through the mass until it is neutralized, thus precipitating calcium carbonate and calcium sulphite and redissolving various organic precipitated constituents; after the precipitate is filtered out, the filtrate is concentrated and treated with sulphuric acid exactly equivalent to the calcium present.—A.P.-C.

Use for Sulphite Waste Liquor. M. Bergmann, E. Immendorfer and H. Loewe. U. S. pat. 1,615,783, Jan. 25, 1927. In order to protect animal fibers during separation from vegetable fibers by carbonization with strong acid reagents, the material is treated with constituents of sulphite waste liquor.—A.P.-C.

Process and Apparatus for the Prevention of Corrosion in Evaporating Equipment by Gases and Vapors Containing Acid Substances. Akt. Kummler and Matter Ger. pat. 441,488 Papierfabr. 25, 219 (Apr. 3, 1927). Ammonia is added to the gases and vapors after they appear from the liquid being evaporated. The excess is removed and used again in the process.—J.L.P.

Sulphite Waste

Dehydration of Sulphite Spirit with Burnt Lime. E. Schlumberger. Papierfabr. 25, 180-183 (Mar. 20, 1927). Commercial sulphite spirit should not have a water content greater than 0.7% when mixed with benzol as a motor fuel. Data concerning 58 experiments relating to the dehydration of commercial sulphite spirit under atmospheric pressure, in an autoclave under pressure, and in the vapor phase by means of calcined lime, are tabulated. By increasing the temperature 10°C., the speed of dehydration is doubled or tripled. The size of the lime particles, whether powder or lumps, has little influence on the reaction. For best results 125% of the theoretical amount of lime required should be used; this lime may be used twice and the alcohol yield is in excess of 99%. About 10% of the lime is converted into the hydroxide. When alcohol vapor is passed over lime heated to 100°C. the estimated time for dehydration to 0.5% water is 15 seconds contact with the lime. Non-aqueous impurities in the alcohol (aldehydes, etc.) are

not removed during the dehydration process and appear in the final product.—J.L.P.

Pulp and Paper Testing

Progress of Electrometric Control Methods in Industry. Henry C. Parker. Ind. Eng. Chem. 19, 660-667 (June, 1927). A review of the present status of electrometric control in industry. Installations in various industries are described. Several of the difficulties encountered in new applications are mentioned, and the various advantages gained by electrometric control are discussed. The progress made within the last few years has been mainly due to improvements in the requisite apparatus.—A.P.-C.

Freeness Tester for Pulp. W. B. Campbell. U. S. pat. 1,627,010, May 3, 1927. The tester consists of a long graduated transparent tube, which widens out at its lower end to a much larger diameter. A screen plate having openings sufficiently small to hold back practically the whole of any pulp sample to be tested is placed within the larger portion of the tube and across its opening. Just below the point where the tube broadens out, a baffle is placed to break up the stream line flow through the narrow portion of the tube and allow it to distribute over the larger area of the screen. A diluted sample of pulp (containing a known weight of dry fiber) is poured into the upper end of the graduated tube (which is made funnel shaped) and the fibers form a mat on the screen. At the same time water is allowed to flow into the tube through a vertical capilliary tube, which is fed from a constant level flow box. When all the pulp has matted, a stable equilibrium will be established, so that there will be a head of water in the graduated tube just sufficient to cause as much water to flow out through the pulp mat as comes in through the capillary tube. The slowness of the stock can be calculated in G.G.S. units from the known weight of pulp, the known flow from the capillary tube and the head read off in the graduated tube. The reciprocal of this value may be taken as the freeness. The results obtained with this instrument are claimed to be independent of temperature, of small variations in the screen plate, and of time between pouring the stock in the chamber and starting the drainage.—A.P.-C.

Strength Testing. H. Schwable. Papierfabr. 25, 83-84 (Feb. 6, 1927). The method of pulp testing in the "Centrallaboratorium," at Helsingfors, Finland, is described. Instead of the usual 50 g. Lampen mill, the recommendation is made that a smaller mill of 20 g. capacity would be a distinct advantage to use.—J.L.P.

Detection of Formaldehyde in Paper. Th. Bentzen Paper Ind. 9,617 (July, 1927). Place 25 cc. of freshly prepared aniline-water (5 cc. of reagent aniline agitated with 100 cc. distilled water and filtered) and 0.5 g. of paper in a 12" by 1" pyrex test tube fitted with a one-hole stopper carrying a two-bulb funnel tube in which is placed sufficient aniline water to fill the lower part of the bent connection between the two bulbs. On boiling the contents of the tube, if formaldehyde is present the aniline water in the bulb funnel will turn milky after a shorter or longer period of time. Absence of milkiness after 1 hr. boiling may be taken as proof of the absence of even traces of formaldehyde.—A.P.-C.

Paper Testing Laboratories. Anon. Paper Tr. J. 84, 45-46 (June 30, 1927). A list of laboratories in the U. S. testing paper and paper products.—A.P.-C.

Comparative Study of French and Scandanavian Kraft Papers. H. Micoud. Papier 30, 531-543 (May, 1927). Comparative bursting, tensile, folding and tearing tests of a number of Scandinavian and French brands of kraft papers showed the French papers to be intermediate between the best and poorest of the Scandinavian papers and to approximate in quality the average Scandinavian krafts.—A.P.-C.

Some Experiments on the Opacity of Papers. Hugo Hanson and H. H. Hackett. Paper Mill 50, No. 27, 10, 14 (July 2, 1927). The experiments described indicate that the requirements for maximum opacity are a spongy, bulky stock, run as free as possible, with maximum amount of dyes allowable, with loading and a formation as smooth as possible.—A.P.-C.

Harvey-Lewellen Caliper Control. Tom Harvey. Paper Mill 50, No. 22, 54 (May 28, 1927). Paper Trade J. 84, No. 22, 85 (June 2, 1927). Brief discussion of its advantages.—A.P.-C.

Mullen Type of Bursting Strength Tester. M. O. Schur assignor to Brown Co. U. S. pat. 1,618,231, Feb. 22, 1927. As the test of the Mullen tester is larger than desirable for testing pulp, according to the present invention the diameter of the die through which the diaphragm is projected in bursting the sheet is reduced to substantially ½", while the diaphragm itself is much larger than this, so that the area stretched as the pulp bursts is much more extended. This increases the life of the diaphragm, and also reduces the pressure required to stretch the diaphragm to such a low figure compared to that required to burst the pulp that it becomes a negligible factor in the gauge reading. In order to prevent slipping between the sample and the clamp, at least one of the clamping members is coated with an abrasive such as sand-paper. Means are provided for applying the pressure mechanically and at a uniform rate; and the connections between the pressure mechanism and the tester are automatically controlled to stop the application of pressure as soon as the sheet bursts.—A.P.-C.

Method of Distinguishing Between Pasted and Unpasted Boards. Alfred Tingle Paper Ind. 9, 418-419 (June, 1927). The following method has been found satisfactory: cut a rectangular slip about 2" by ¾", bend into the form of a capital L, one limb being decidedly shorter (say about ½ an in. long), stain the clean-cut edge of the shorter limb with iodine (0.04 g. per 100 cc.) or with phenolphthalein (0.5% solution in alcohol, let dry, and moisten with distilled water), and examine with a low power compound microscope or even with a good hand lens (especially for the thicker boards) for presence of starch or of waterglass. The author considers that considerable information would be gained were more attention paid to the examination of paper in thin sections (by embedding in paraffin and cutting with a microtome), instead of confining attention, as at present, to the study of teased samples.—A.P.-C.

Machinery

Log-Barking Apparatus. J. Moravec. U. S. pat. 1,619,151, Mar. 1, 1927. The logs are fed along a slightly inclined log deck or table into a hopper or chute, at the bottom of which and slightly distant from which is the abrading or barking device proper. The latter consists of two rotating abrading rolls (e.g., such as described in U. S. pat. 1,456,328, of May 22, 1923) of the same length as the logs, and parallel to the length of the hopper. The bark is removed by positively rotating the log as it lies over the rotating abrading rolls, and it is held pressed into contact with the latter by the weight of the overlying logs. An ejector is provided to push out the log after it has been barked; the bottom log in the hopper then drops on to the abrading rolls,and at the same time an escapement mechanism admits just one log from the log deck into the top of the hopper. Owing to the rotation of the bottom log in contact with the abrading rolls and its contact with the overlying logs in the hopper, the rotation of the former is transmitted to the latter somewhat in the manner of a train of gears, and this effects a considerable preliminary abrasion, wearing away and loosening the bark before the logs reach the cutting rolls. If logs of large diameter are to be rossed, the hopper may be inclined instead of vertical, so as to relieve the rossing rolls of part of the weight of the overlying logs.—A.P.-C.

Moisture Testing Means for Paper Machines. F. A. Peschl assignor to International Paper Co. U. S. pat. 1,623,436, Apr. 5, 1927. The principle of the invention rests in measuring

the current intensity passing through a given portion of the moist web, variations in the moisture content of which causes variations in the current. A contactor member or shoe with spaced contact plates or surfaces rests on the traveling web, and means are provided for compensating for variations in the acidity of the paper stock. The contactor block or shoe is supported so as to rest with a floating action on the web, pressing the latter gently in a slightly curved form, and the construction is such that the degree of pressure on the web does not vary the area of contact between the paper and the contact plates. The shoe is mounted in such a manner that it can be moved across the width of the sheet so as to determine the moisture content at any given point across the width.—A.P.-C.

Moisture Indicating and Recording Device for Paper Machine. G. S. Witham, Jr. U. S. pat. 1,626,060, Apr. 26, 1927. The moisture content of the paper is determined by passing air, or any other suitable gas, over a section of the surface of the web, so that such gas will take up more or less moisture from the paper, depending on the moisture content of the latter. Then by ascertaining the moisture content of the air after such contact, a reliable indication of the moisture content of the paper is obtained. By applying such tests at different points of the sheet, an average estimate of the moisture content is obtained. In the embodiment described in the specifications, after passing in contact with the paper the air is passed in contact with wet and dry bulb thermometers, and by the use of standard tables the relative or absolute humidity of the air may be determined, according as to whether unconditioned or conditioned air has been used; and from this the moisture content of the sheet may be found. The device is mounted so that it may be moved continuously across the sheet. The thermometers may be connected to indicating or recording instruments, and they may also be connected with controlling mechanism, so that the driers are controlled by the temperature and humidity of the sheet.—A.P.-C.

Washing Cylinder for Paper Pulp Machines. N. H. Bergstrom. U. S. pat. 1,619,052, March 1, 1927. The patent covers various mechanical details in the construction of pulp washing cylinders whereby the covering wire can be easily replaced, the grates provided to support and protect the screens are removable from the drum either with or independently of the screens. The cylinder is constructed sectionally to permit the easy removal of any of the parts for repairs or replacement, and at the same time it is simple, strong and durable.—A.P.-C.

Apparatus for Thickening and Washing Pulp. A. S. Moses. U. S. pat. 1,626,951, May 3, 1927. The pulp is fed into a chamber over which is arranged a series of filtrate chambers separated from the pulp chamber by a filter consisting of a fabrick or grating over which are laid courses of progressively smaller sizes and finally sand. Each filtrate chamber is closed at the top by an elastic diaphragm which is vibrated so as to cause pulsations in the filtrate, which are transmitted through the filter and thus keeps the latter free of any pulp which might become lodged therein and clog it. Stock is introduced into the pulp chamber and clear water passes out at the top of the filtrate chambers until the pulp has been thickened to the required consistency, when it is discharged from the chamber. Before discharging, if desired it can be washed by feeding fresh water into the chamber instead of stock.—A.P.-C.

Pulp Web Cutter. W. A. Kelly. U. S. pat. 1,625,472, Apr. 19, 1927. This is an improvement on U. S. pat. 1,005,655, of Oct. 10, 1911. The invention comprises a pair of substantially U-shaped elements in the forms of frames with their outer ends closed. These frames are formed with eye terminals embracing a shaft common to both frames, the latter being arranged side by side and at diametrically opposite sides of the shaft. On each frame, at its outer closed end, is a blade having its outer edge serrated to provide spaced outwardly projecting bevelled cutting teeth, which protrude beyond the closed side of each frame so as to penetrate the pulp lap or web. The cylinder mould is formed with a central circumferential imporous pulp weakener portion so that the lap or web can be separated into two strips longitudinally. After passing through press rolls the strips are fed to breaking rolls which are driven at a higher speed than the press roll, so that the strips are separated by the breaking rolls along the transverse lines of perforations.—A.P.-C.

Sectional Electric Paper Machine Drive. W. L. Merrill assignor to General Electric Co. U. S. pat. 1,614,142, Jan. 11, 1927. Each section of the paper machine is driven by a direct current motor, and in order to keep the speed relation of the various units or sections absolutely constant mechanical connections are provided through which power is exchanged between the units; provision is also made for altering the speed relation of the driving motors and for controlling the speeds of certain of the motors, such regulating means being connected to automatically respond to the exchange of power and control the speed of the driving motor of the corresponding unit. In the example described a small shaft is connected to be driven positively from the shaft of each machine section through speed adjusting means consisting of cone pulleys; the several small shafts are coupled to run in synchronism by being all connected to a common shaft by means of bevel gears and magnetic clutches. A torsion dynamometer is provided to measure the torque transmitted through each of the auxiliary shafts. The angular variation in the position of any rotating machine element with respect to the synchronizing shaft is merely that permitted by the corresponding torsion dynamometer, and this variation can be reduced to a negligible value. With this arrangement the variation in angular movement of any given motor is so slight as to produce the same effect as would be produced if each of the sections was geared directly from one shaft.—A.P.-C.

Harland "Interlock" Paper Machine Drive. Emile Barbier. Papeterie 49, 294-306 (Apr. 10, 1927). Detailed description of the drive, with a discussion of its performance.—A.P.-C.

Dandy-Roll Support. E. N. Daulton. U. S. pat 1,621,874, Mar. 22, 1927. The dandy-roll is mounted in bearings which are mounted in a pair of arms which are pivotally mounted and which are acted upon by springs which determine the pressure with which the dandy-roll rests on the wire.—A.P.-C.

High Pressure Stock Inlet for Fourdrinier Paper Machines. J. M. Voith Machinenfabrik. Fr. pat. 620,299. The front wall of the stock inlet is sloping so as to form an acute angle with the bottom of the inlet, and in the acute angle thus formed is placed either a rotating perforated roll or a rotating shaft provided with paddle, so as to effect thorough mixing of the stock as it is delivered on to the wire. Back of the distributing and mixing roll is a deflector or baffle which divides the stock into two streams, which combine again after passing the baffle, thereby further improving the mixing of the stock.—A.P.-C.

Alexander-Youngchild Wire Cleaner. C. E. Youngchild. Paper Mill 50, No. 27, 20, 22 (July 2, 1927). Paper Trade J. 85, No. 3, 52 (July 21, 1927). This device consists essentially of two narrow brushes which extend across the machine wire at any convenient point of its return run, and which oscillate in opposite directions continuously so as to keep the entire width of the wire, at a given point on its return run, constantly scrubbed. The idea is that this constant scrubbing action will get the stubbornest spots before they have a chance to become hammered into the wire. Contrary to what might at first be expected, the wire lasts longer than when it is not thus scrubbed, because what wear there may be, due to the scrubbing action of the brushes, is more than offset by elimination of the abrasive action of accumulated grit on the wire as the latter passes over the suction boxes and rolls. The merits of the device are exemplified by results obtained by their use in practical mill operations.—A.P.-C.

Section of the

COST ASSOCIATION OF THE PAPER INDUSTRY

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THE AMERICAN PAPER AND PULP ASSOCIATION

Edited by
THOS. J. BURKE, C. A., Sec.-Treas.

Cost Nomenclature*

By Andrew H. Blass, Pittsburgh, Pa.

Webster defines nomenclature as "the system of names used in any science or art or by any school or individual." Accordingly, when we speak of cost nomenclature, we should have in mind the terms used in cost accounting describing the various elements that make up the aggregate cost of the product or service.

The subject of "Cost Nomenclature" can and must be approached in the same manner as that of general accounting nomenclature. The basic requirement is that any expression having an element of mystery be eliminated and that the subject be definitely placed in the realm of common sense. For, after all, common sense is the real basis of cost nomenclature, as it is, to a great extent, in any nomenclature.

Cost accounting is a sub-division of general accounting and as such it must base its justification for existence on the appeal to the intelligence of the average business man. We cannot approach the business man and speak a language which is foreign to him. It would be poor psychology to attempt to give an organization something it needs and, because of the manner in which it is presented, find that it is not accorded sympathetic understanding simply because it is confusing in its terms.

There is nothing mysterious in the establishment of cost records and there is no necessity for surrounding a cost record with the red tape which is too often associated with a cost system. No undertaking can be built upon a structure of accounting records, but accounting records must be built to fit the needs of the undertaking.

Any layout of cost records, as well as any terms in connection therewith, must be subordinated to the general business objective; and the cost system, together with its nomenclature, must be flexible enough to recognize its limitations and emphasize its virtues. The basic terms of costs are probably generally understood both by the layman and the professional accountant. The foundation of material, labor and overhead is secure in the minds of everyone. In talking with a great number of business executives, I find that the term "overhead" is much preferable to the term "burden," or to "on-cost" used by British accountants.

The ordinary conception of costs is usually restricted to factory costs. Administrative and distributive costs are sometimes greater than manufacturing costs and as such require an analysis fully as detailed as the ascertained costs of factory production. It would appear that our efforts might well be divided into establishing a nomenclature of terms which would indicate precisely the nature of the expenditure and the particular department against which such an expenditure is chargeable.

In following the product through the organization, the elements, of course, might be divided into factory costs, shipping costs, administrative costs and distributive or sales costs. It is a frequent practice to merge shipping costs with distributive costs. It is my opinion that such merging tends to blur a very definite functional cost which should stand by itself. Naturally this shipping cost does not include the cost of transportation as it is not controllable by the organization manufacturing the product.

In this connection, it is my thought that cost studies should be divided into two parts, such a division being for the guidance of those responsible for the progress of the organization and consisting of separating the elements of each class of costs into:

1—Those which are controllable through action of the department or other supervising heads.

2—Those which remain fixed through their very nature.

In any well organized enterprise, financial progress can be traced directly to the ability of the supervisory staff to have the controllable costs conform more closely to the output. That is, indirect or even direct cost is capable of manipulation through proper organization to eliminate any drastic increase or decrease in the costs of finished units by an intelligent analysis of the items of expenditure which enter into them and which are of such a nature as to be expanded or contracted with apparent ease.

In discussing nomenclature, it is always well to bear in mind that the terms used in the particular organization in which cost records are to be installed are preferable to abstract terms which have no particular meaning to certain organizations. If it is considered desirable to ascertain costs in a particular function or department, the simplest thing to do is to call this element of cost by the name by which it would be known to the organization seeking to ascertain such costs.

It is frequently a difficult matter to definitely decide that certain items of costs are to be included under a specific title. Then, too, many terms vary in different organizations. For that reason, it would be to our best interests to confine the nomenclature of costs to a relatively few items which are found applicable to all industries. From this point, the terms can be extended to fit the particular needs of particular organizations, with special care that the terms finally selected are those which are understandable alike to the accountant and to the business man.

In a paper as brief as this one we cannot hope to formulate standard cost nomenclature. The problem is far too big and too involved to be so readily solved. At best, we can analyze some of the problems in the standardization of cost terminology, and suggest some plan for future study and work in this field.

The lack of uniformity in our accounts is obvious when we in-

* From N. A. C. A. Bulletin.

vestigate the variety of interpretations of such a well-known term as "depreciation." A few of the definitions, selected from some of the well-known authors on accounting, are:

1—"Depreciation is used to describe the lessening in value of an asset acquired for use."—Pace.

2—"Depreciation is the physical deterioration of fixed assets caused by the wear and tear of operation, and by the action of the elements, and resulting in an impairment of operating effectiveness."—H. A. Finney.

3—Kester defines depreciation: "The loss, arising from years of service, of the value in capital investment in perishable property."

4—"Depreciation is shrinkage in value of a fixed asset due to its possession and use."—Greeley.

5—"Depreciation. In respect to capital it is the measure, as between an earlier and later date, of the reduction in value of any given property."—Lisle.

6—"The committee will use it (depreciation) only as meaning the loss of value or worth of property units which are parts of going concerns. Although this may be due to many causes, the general discussion will include consideration only of those effects, which, like wear and tear, age, use, and obsolescence or inadequacy, bring a physical property unit to the end of its service life."

Special Committee of the American Society of Civil Engineers

The foregoing are by no means all of the available definitions. They could be extended to such numbers as to exceed the famous 57 varieties.

The variety of definitions for such a common term as depreciation leaves us in doubt as to what it really does mean. Is the lessening in value caused by other factors than use, action of the elements, and wear and tear of operation to be termed depreciation? If so, in what respects, if at all, does depreciation differ from depletion, obsolescence, or from amortization?

It is admittedly not an easy problem to advance a concise and complete procedure for handling such an account as has just been named. All the more reason, then, that there should be undertaken the task of assembling and sifting the best thought on each individual account classification. It is a problem for a group of men with a high degree of theoretical and practical foresight.

On the other hand, of more immediate interest to most of us is the question of standardization of cost terms by industries. It is probably easier to come to a common understanding on a term such as depreciation when we limit ourselves to a concrete case.

The value of widespread use of a uniform set of accounts in a particular line of manufacture lies not only in the keeping of accurate costs, but, further, in allowing a comparison of conditions in different plants engaged in similar work. Increasingly competitive conditions in business force men to devote greater attention to conditions in the business as a whole, as well as to their own particular problems.

No doubt many of you are familiar with the report of the National Coal Association on a Standard System of Accounting and Analysis of Cost of Production. Many of the features of this report are in exact accord with what I believe should be undertaken, by your Association, for key industries and gradually expanded to take in all such industries as do not already have a standardized nomenclature. The Coal Association report begins with a general discussion of conditions peculiar to coal mining, which will affect accounting treatment of depreciation, depletion, obsolescence, leases, additions and betterments, taxes, etc. Then follows a presentation of the distinction between capital and operating expenditure. Next is a study of the individual accounts—nomenclature—of the balance sheet and profit and loss statement. The report ends with an outline of bookkeeping methods and standard forms.

As a further illustration of what we mean by standard and uniform accounts let us take the baking industry. Without entering the field exhaustively, the following major profit and loss items might be suggested:

Total Production at Sales Value.
Less Damaged, Stale, Donations, etc.
Net Sales.
Manufacturing Cost:
  Cost of Materials.
  Cost of Labor.
  Shop Expenses.
Total Cost of Manufacturing.
Administrative Expenses.
Selling and Delivery Expense:
  Shipping.
  Route Expense.
Total Expenses.
Net Profit.

Note that this statement differs from the usual Profit and Loss Statement. It begins with the market value of the manufactured product and accounts for the entire production—whether such production be sold, lost, strayed, or stolen. The difficulty with many so-called cost systems is the fact that no absolute tie-up is maintained between production and disposition of production, that the cost records are looked upon as more or less separate and distinct from the general accounting records. Except in rare cases, this is a serious error.

Whatever the exact form recommended by a competent group of men, the advantages of uniformity are at once apparent. Into each main classification here listed will be charged certain designated costs, resulting in uniformity of practice where, at present, no such uniformity exists. We could, for example, list the items under Cost of Materials, as:

Wheat Flour.
Dusting Flour.
Other Flour.
Sugar, Malt, Milk, Shortening.
Pan and Trough Grease.
Other Material.
Total Material Cost.

Naturally, quite a different result would be shown if some of these items were, let us say, listed as overhead instead of direct cost of material. Statements comparing one bakery's costs with another would be valueless.

If such data were disseminated among the bakers of the country without an eye to regulating prices, the procedure would hardly be frowned upon by the government. In fact, our Secretary of Commerce is even at present doing his utmost to encourage efforts along these lines.

This matter should, of course, be studied carefully. My thought, and the thought I want to leave with you this evening is, this: Let the Association, through its Committees on Research and Standardization, undertake the codification of say one industry each year. Encourage the similar Committees of the Chapters in other cities to undertake similar work. Exchange ideas. Develop, on a co-operative basis—not only among Association members, but also in co-operation with the leaders in the respective industries, and associations of such industries—at least one such manual each year. Publish the manual, and make it available for use by all in the industry. Encourage the adoption of such nomenclature.

This will be a large undertaking. But, you now have a large organization—a technical group considerably larger in membership than the combined membership of the two national organizations of public accountants.

You have the organization, the technical ability, and the means to accomplish the task. Furthermore, as leaders in the field of cost accounting you have the responsibility of leadership and this is one of the ways by which such responsibility could and, in my humble opnion, should be assumed.

Dividends and the Law*

Report of Special Committee on Definition of Earned Surplus

To the Council of the American Institute of Accountants:

Gentlemen: Your special committee on the definition of earned surplus would respectfully report as follows:

An examination of the statutes of the states governing the payment of dividends indicates that at the present time there is neither uniformity in the legal requirements nor exactitude in the definition of the sources from which dividends may be paid. With two exceptions, however, all the states have certain express statutory provisions with respect to the payment of dividends. Some of these statutes provide that no dividends shall be declared or paid while the corporation is insolvent or the payment of which would render it insolvent; some provide that no dividends shall be declared or paid while the capital of the corporation is impaired or which would be effective to impair its capital; and some provide that no dividends shall be declared or paid except out of profits.

In view of this situation, therefore, it appears evident to your committee that the present state laws furnish no satisfactory basis for the definition of earned surplus available for dividends. Further inquiry and investigation indicated, also, that any attempt at this time to secure the passage of uniform legislation by a substantial number of the states, regulating the payment of dividends would necessarily be fraught with many difficulties and delays since legislation of this character would require radical revision and adjustment of present laws and would, in many instances, tend to have the effect of reducing the revenue derived from incorporation fees.

From a study of the procedures followed by accountants in their certificates and reports, it further appears to your committee that, at the present time, there exists a serious lack of uniformity among the members of our own profession as to just what constitutes earned surplus available for dividends. This situation is well illustrated by the lack of unanimity of accounting opinion with respect to the proper treatment of depreciation on appreciation, or of appropriations of surplus in conformity with sinking-fund stipulations embodied in agreements covering the issue of preferred stock. The proper presentation of the essential facts on a balance-sheet in cases where deficits from operations of prior years have been wiped out by means of an internal recapitalization constitutes a problem on which our practice is by no means standardized.

Numerous other examples might be cited indicative of the variations in procedure, as followed by recognized accounting firms, in presenting the essential facts with respect to surplus. After careful consideration, therefore, of what may be wise and expedient to attempt at this time, your committee has concluded that a standardization of practice and procedure, relating to the treatment of surplus, by the principal accounting firms of the country, furnishes the surest foundation for any action looking to an improvement in the state laws governing corporations, and, further, that the American Institute of Accountants should assume the responsibility for developing and promulgating this standard practice.

Your committee would recommend that it be empowered to prepare and submit in the near future, to our members in the form of a letter, a questionnaire designed to cover the principal questions that arise with respect to the proper accounting treatment of transactions affecting the three types of surplus, namely:

Earned surplus
Paid-in surplus
Surplus arising from appreciation

It is felt that a careful study and analysis of the replies received in response to this questionnaire should furnish a satisfactory basis for the preparation of a report by your committee embodying recommended standard practices relating to the presentation of surplus accounts. It is believed that such a report, subject to its acceptance and confirmation by the Institute, should be published by the Institute and promulgated as an official statement of the position of the Institute with respect to these questions.

Your committee has not been unmindful of the fact that the original resolution by which it was created provided that steps be taken, in co-operation with similar committees of the Chamber of Commerce of the United States, the American Bar Association and the American Bankers' Association, to draft and secure the enactment by the several states of appropriate legislation affording a uniform interpretation of earned surplus from which dividends can be paid.

In conformity with the intent of this resolution, your committee has made the study and examination, previously referred to, of the statutes of all the states governing the payment of dividends. It developed upon investigation, however, that the present laws of the states are couched in such general terms and are so varied in their requirements that the passage of uniform legislation of this character can come only as the result of an intelligent and persistent popular demand, and your committee has come to the conclusion that the first step to be taken is to secure agreement and standardization among accountants the country over, as to procedures to be followed in the presentation of the different types of surplus. Once this agreement and standardization of practice have been generally secured among the members of our own profession, it is felt that we may then be much better situated to approach other organizations with a view to co-operating with them in the effort to secure the desired revision of our present corporate law.

Your committee recommends, therefore, that it be empowered to take preliminary action looking toward the promulgation of the institute of an official statement with respect to approval procedures and forms of presentation of the different types of surplus, and with the purpose of expectation that the promulgation of this statement by the Institute will be shortly followed by action, taken in co-operation with other representative bodies and associations, to provide for the drafting of a suitable corporation law and for such undertakings as may be necessary to secure its enactment by the states of the United States.

Respectfully submitted,

ARTHUR ANDERSEN, Chairman
GEORGE B. BUIST

*From American Inst. of Accountants Year Book

Three-Year Basis for Computing Income Tax

The income tax law of the State of Wisconsin has been modified in a number of important respects. The system formerly followed in Great Britain of computing taxable income for any one year on an average of three years has been adopted. An exception is made for payments due in 1928, for which the taxable income will be the average income for the two years, 1926 and 1927.

Another innovation is that requiring computation of the tax without income exemptions and then allowing credit of fixed amounts against the tax computed. A single person is allowed a tax credit of $8 against a computed tax. For husband and wife, or head of a family, the credit is $17.50. For each dependent the credit is $3 additional. The tax rate is graduated from 1 per cent on the first $1,000 of net income to 5½ per cent on the twelfth $1,000, and 6 per cent on all income in excess of $12,000. From *The National Income Tax Magazine.*

Refuses to Permit Inventory Revision

An inventory taken upon the basis of cost or market, whichever is lower, may not later be revised to accord with the market price established subsequent to the inventory date. The petitioners were the holders of partnership interests in 1919 in the partnership of Blake & Stearns. The sole question presented by these proceedings is the proper inventory figure for the close of the fiscal year of the partnership, November 30, 1919.

Findings of Fact

Petitioner * * * took its inventory at November 30, 1919, upon the basis of cost or market, whichever was lower. The market for woolens had been good during the fiscal year ended November 30, 1919, and prices were exceedingly high on November 30, 1919. Since the market was generally above cost on November 30, 1919, the inventory reflected cost figures except in some few instances where certain lots of goods were priced at slightly less than cost. The inventory was taken by members and employees of the firm after consultation and after endeavoring to ascertain what the market was. * * *

When the petitioners consulted an attorney with respect to certain income tax liabilities involving the year 1919, the attorney suggested that in the light of the fact that the market was stagnant at November 30, 1919, the inventory was possibly overstated and that it should be revised. The partnership then addressed letters to manufacturers, from whom it purchased goods, as to the prices of goods on November 30, 1919, and based upon such replies the partnership revised its inventory at November 30, 1919. The amount reported on the return was $146,546.17. The partnership determined, upon the information which it had received in 1923, that the correct amount of the inventory as of November 30, 1919, was $90,443.36. The Commissioner has refused to recognize the revised inventory as the correct inventory upon the basis of cost or market, whichever is lower.

Opinion

SMITH: Although the evidence is clear that the inventory at November 30, 1919, shown upon the return of the partnership of Blake & Stearns for the year ended November 30, 1919, at $146,546.17, was taken upon the basis of cost or market, whichever was lower, as could best be determined by the partnership at that date, it is nevertheless contended herein that the inventory was overstated as of that date and that the correct amount of the inventory was $90,443.36. Petitioners claim the right to make such adjustment in the inventory by virtue of Article 1584 of Regulations 45, revised in 1921.* * *

Particular attention is called to the following sentence of the regulations:

> Where no open market quotations are available, the taxpayer must use such evidence of a fair market value at the date or dates nearest the inventory as may be available.* * *

Petitioners also call attention to Article 1584 of Regulations 62, 1922 Edition, which provides in part:

> Where no open market exists or where quotations are nominal, due to stagnant market conditions, the taxpayer must use such evidence of a fair market price at the date or dates nearest the inventory as may be available.

The evidence before us, all goes to show that the big break in the woolen market came several months after the close of the partnership's fiscal year under consideration. In reply to a communication sent to Strong, Hewat & Co., Inc., of New York City, from which the partnership had purchased goods which were in its inventory at November 30, 1919, the partnership was advised in December, 1923:

> Re your request for information as to the market value on November 30, 1919, of such merchandise as you purchased from us during the year 1919.
>
> It is difficult at best to answer any such inquiry, as a smash in the market immediately following that time was of such proportions that the prices that could be obtained for this same merchandise were ludicrous.

Letters from other manufacturers are of the same tenor. The break in prices occurred subsequent to the inventory date. There is no evidence that the goods included in the inventory at November 30, 1919, could have been replaced at a less cost on November 30, 1919, than the prices at which they had been purchased. The evidence is simply to the effect that the market was stagnant at that time owing to the seasonal character of the partnership's business and that when the partnership would ordinarily have sold its merchandise, prices had broken and it could not sell them even at cost. There is no evidence that the market for the partnership's goods on November 30, 1919, was less than the prices at which such goods were carried into the inventory by the partnership at the date of the taking of such inventory, which was within a very few days after the close of its fiscal year. The action of the respondent in refusing to revise the inventory reported in the partnership return for the fiscal year in question is approved.

Judgment will be entered on 15 days' notice, under Rule 50.

Considered by Littleton, Love and Trussell.

Paper Compared to Other Industries

By THOS. J. BURKE

The 1925 figures compiled by the Bureau of Census for manufacturing industries show that the "paper and wood pulp" industry ranks seventeenth on the basis of the number of wage earners, fifteenth on the basis of the cost of materials used in manufacturing, seventeenth on basis of value of products made and eighteenth on basis of value added by manufacture. The number of establishments is given as 763 or 0.4 per cent of the total number for that year. Wage earners in our industry totaled 123,842 or 1.5 per cent of the total for all manufacturing industries. Materials used cost $605,860,000 (1.7 per cent of total), while value added by manufacture was $366,022,000 (1.4 per cent of total), making a total value of products made of $971,882,000, representing 1.5 per cent of the total value of products made by manufacturing industries, in the United States.

It will be noted that the "cost of materials" represents 62.33 per cent of the total manufacturing cost of the products made, the balance of 37.67 per cent representing the "value added by manufacture." By dividing the number of establishments—763—into the average number of wage earners, the total cost of materials, the total value added by manufacture and the total value of products, we find the "average mill" in 1925 employed 162 wage earners, consumed $794,049 worth of materials, added $479,714 value by manufacturing, making a total "average" manufacturing cost of $1,273,763.

Wholesale Paper Index Lower

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 6, 1928.—Paper and Pulp are given a December wholesale price index number of 90.9 per cent compared with 91.3 for November, and 93.7 for December, 1926, taking 1926 at 100 per cent, according to the Bureau of Labor Statistics, Department of Labor.

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Cleanliness—

Filtered air used in enclosed system.

Chips—

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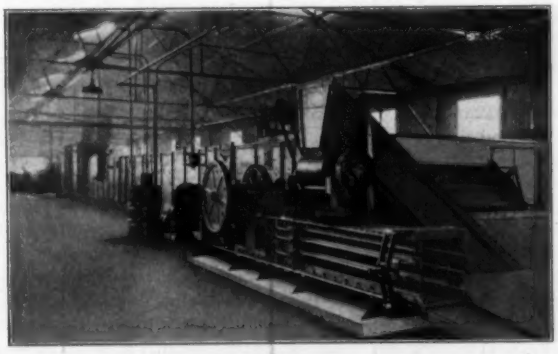

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CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Attleboro, Mass.—The Rhode Island Cardboard Company, Pawtucket, R. I., has completed negotiations through its subsidiary, the Emerson Realty Corporation, for the purchase of the plant of the Home Bleach and Dye Works at Attleboro, which has been idle for a number of months past. The factory will be remodeled and improved and will be used by the Cardboard Company as a new plant. It is proposed to install machinery at an early date, and develop full operations. It is understood that the project will represent more than $500,000 investment, including property purchase and equipment. Lowell Emerson is president.

St. Paul, Minn.—The Waldorf Paper Products Company, Myrtle and Pillsbury Avenues, is perfecting plans for the early construction of an addition to its power plant for which bids were recently asked on general contract, to include the installation of generator, steam-power equipment, boiler plant, etc. The work will be carried out in connection with an expansion program to cost more than $300,000. Ralph D. Thomas, 1200 Second avenue, South, Minneapolis, Minn., is engineer. W. M. Waldorf is president.

Philadelphia, Pa.—Following its recent purchase of property in rear of present factory, 50x175 feet and 50x100 feet, the Keystone Index Card Company, 3225-7 Race street, manufacturer of commercial paper products, card stocks, etc., will likely defer erection of proposed addition for several months, with project to mature in the fall. The extension will be two-story, brick; estimated cost has not been announced. Judson D. Laverell is president.

St. Joseph, Mich.—The St. Joseph Board and Paper Company is said to be planning the early rebuilding of the portion of its plant, destroyed by fire January 30, with loss reported in excess of $200,000, including equipment. Reconstruction will approximate a like amount.

Eau Claire, Wis.—The Commerical Package Corporation, recently organized by Raymond B. Webster, 1132 State street, Eau Claire, and associates, is said to be planning the early operation of a local factory for the manufacture of paper boxes and containers. Alfred I. Fagerlie, 510 Fourth street, Eau Claire, will be an official of the new organization.

Monroe, Mich.—The Consolidated Paper Company has filed plans for a proposed new plant addition, for which general contract has been let to the Owen-Ames-Kimball Company, Grand Rapids, Mich., and will proceed with superstructure at once. It will be four-story, designed primarily for the manufacture of folding paper boxes and containers, with estimated cost placed at close to $300,000, with machinery. The structure is expected to be ready for occupancy early in August.

Dayton, Ohio—The United States Corrugated Fibre Box Company, 1315 Martindale avenue, Indianapolis, Ind., has superstructure in progress on its proposed new plant on Holmes avenue, Dayton, and is taking bids for miscellaneous completion work. It is proposed to have the structure ready for equipment installation at an early date. It is understood that a crane will be installed. The factory will be one-story, 125x300 feet, reported to cost close to $100,000, with machinery. Charles E. Bacon, Odd Fellows Building, Indianapolis, is architect.

Hodge, La.—The Advance Bag and Paper Company, Middletown, Ohio, is pushing construction on its new local plant, designed for the production of kraft pulp, paper and paper bags, reported to cost more than $1,000,000, and proposes to have the structure ready for operation during May. The plant will represent a complete self-contained operating unit. To provide for this and other expansion the company is disposing of a bond issue of $3,750,000. John E. Kelley is president.

St. Louis, Mo.—The Gast Bank Note Company, 4175 Chippewa street, manufacturer of commercial paper stock, has awarded a general contract to the W. E. Harting Construction Company, 722 Chestnut street, St. Louis, for a new manufacturing plant, to be one-story, 57x127 feet, reported to cost in excess of $50,000, with equipment. C. E. Thurston, Webster Groves, Mo., is architect.

Indianapolis, Ind.—Beach & Arthur, Inc., 221 West South street, lately organized by local interests, is making ready to begin operations at its new local plant for the production of a line of paper novelties, including embossed paper specialties. The factory will represent a reported investment of about $30,000. W. H. Arthur, Marion, Ind., formerly connected with the Economy Box and Pie Plate Company, Marion, is president of the new organization; and R. W. Beach will act as vice-president.

Latrobe, Pa.—The Latrobe Paperboard Company has been organized by C. H. Bonner, Crafton, Pa., and associates, to manufacture heavy paper goods, paperboard, etc., and is said to be arranging for the early operation of a plant in this vicinity. Others connected with the concern are N. J. Wallace, Oakdale, Pa., and Humphrey Morris, Sewickley, Pa.

St. Louis, Mo.—The Midland Paper Company, 524 South First street, dealer in paper goods for general commercial service, is said to be arranging the replacement of the portion of its plant, destroyed by fire January 30, with loss reported at close to $13,000. The structure is owned by the Valentine Warehouse Company, and occupied under lease by the Midland organization.

New York, N. Y.—Harry Fleisig and associates, has leased the second floor of the building at 322 East Twenty-third street, and will establish a plant at that location for the manufacture of paper bags and containers. Operations will soon begin.

Dubuque, Iowa—The Maizewood Products Company is pushing construction of its proposed new local plant, and will proceed with machinery installation at an early date. The mill will be three-story, 60x450 feet, and will be given over to the production of wallboard and kindred products, using cornstalks as source of raw material. It is estimated to cost about $150,000.

Edmunston, B. C.—The Restigouche Company, Ltd., operated by the Fraser Companies, Ltd., Edmundston, B. C., with properties in Quebec, New Brunswick, etc., is disposing of a bond issue of $1,500,000, a portion of the fund to be used for general financing and expansion. The company deals largely in forest products for pulp supply, having main plant at Athol, near Campbellton, N. B. Archibald Fraser is president.

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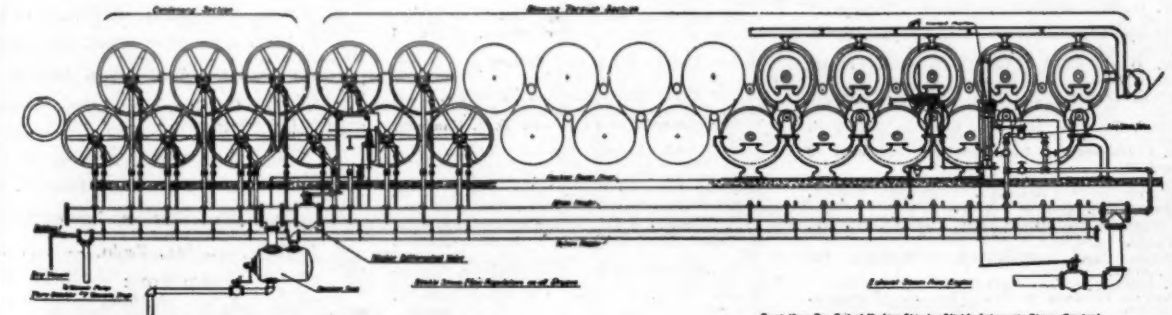

Front View Wet End of Machine Showing Stickle Compound Differential Rapid Circulating Drainage System

Front View Dry End of Machine Showing Stickle Automatic Steam Control

The Stickle Automatic Steam Control and Differential Rapid Circulating Drainage System will automatically maintain an evenly dried sheet at the lowest possible pressure at which a sheet of paper can be dried. The sheet will be held close to a one-half of one per cent moisture change.

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STICKLE STEAM SPECIALTIES CO.
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Imports of Paper and Paper Stock

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING FEBRUARY 4, 1928

SUMMARY

Cigarette paper .....645 cs.
Wall paper .....126 bls., 13 cs.
Paper hangings .....114 bls., 56 cs.
News print .....1417 rolls, 8 cs.
Printing paper .....51 rolls, 124 cs.
Kraft paper .....63 bls.
Wrapping paper .....497 rolls, 2 cs.
Packing paper .....24 bls., 20 cs.
Decalcomania paper .....30 cs.
Tissue paper .....100 cs.
Parchment paper .....2 bls.
Litho paper .....5 cs.
Surface coated paper .....114 cs.
Baryta coated paper .....115 cs.
Gold coated paper .....6 cs.
Metal paper .....2 cs.
Colored paper .....4 cs.
Drawing paper .....31 cs.
Filter paper .....4 cs.
Writing paper .....18 cs.
Sulphate paper .....431 rolls
Straw board .....780 rolls
Miscellaneous paper
328 bls., 12 pkgs., 3 cylinders, 130 cs.

CIGARETTE PAPER

P. Lorillard Co., Providence, Marseilles, 100 cs.
R. J. Reynolds Tobacco Co., Vincent, Havre, 200 cs.
Liggett & Myers Tobacco Co., Vincent, Havre, 35 cs.
De Manduit Paper Corp., Vincent, Havre, 96 cs.
De Manduit Paper Corp., Waukegan, Havre, 133 cs.
Liggett & Myers Tobacco Co., Paris, Havre, 20 cs.
Standard Products Corp., Paris, Havre, 61 cs.

WALL PAPER

Globe Shipping Co., New York, Hamburg, 9 bls.
F. J. Emmerich, New York, Hamburg, 10 bls.
S. Stern Stiner Co., New York, Hamburg, 5 bls.
A. C. Dodman, Jr., Inc., Olympic, Southampton, 12 bls., 7 cs.
F. J. Emmerich, Minnekahda, London, 21 bls.
W. H. S. Lloyd & Co., Andania, Liverpool, 3 bls., 1 cs.
F. J. Emmerich, Calgaria, Liverpool, 54 bls.
Globe Shipping Co., Thuringia, Hamburg, 12 bls., 5 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., Missouri, London, 45 bls., 19 cs.
Whiting & Patterson Co., Inc., Olympic, Southampton, 11 cs.
W. H. S. Lloyd & Co., Minnekahda, London, 37 bls., 22 cs.
A. C. Dodman, Jr., Inc., Andania, Liverpool, 13 bls.
A. C. Dodman, Jr., Inc., Calgaria, Liverpool, 7 bls.
G. J. Hunken Co., Inc., Thuringia, Hamburg, 12 bls., 4 cs.

NEWS PRINT

Perkins Goodwin & Co., G. Washington, Bremen, 90 rolls.
Parsons & Whittemore, Inc., Dresden, Bremen, 458 rolls.
Ossian Ray, Drottningholm, Gothenburg, 141 rolls, 6 bls.
F. Henjes, Jr., Thuringia, Hamburg, 68 rolls.
Perkins Goodwin & Co., Thuringia, Hamburg, 660 rolls.

PRINTING PAPER

P. C. Zuhlke, Winifredian, Antwerp, 45 cs.
Japan Paper Co., Ryndam, Rotterdam, 5 cs.
P. C. Zuhlke, Lapland, Antwerp, 50 cs.
Keuffel & Esser Co., New York, Hamburg, 51 rolls.
National City Bank, Dresden, Bremen, 16 cs.
J. Henschel & Co., Thuringia, Hamburg, 8 cs.

KRAFT PAPER

Wilkinson Bros. & Co., Inc., Bergensfjord, Moss, 63 bls.

WRAPPING PAPER

E. Dietzgen & Co., Lapland, Antwerp, 2 cs.
Blauvelt Wiley Paper Corp., Drottningholm, Gothenburg, 497 rolls.

PACKING PAPER

A. Stauff & Co., G. Washington, Bremen, 4 bls.
National Consumers Paper Co., Ryndam, Rotterdam, 6 bls.
Birn & Wachenheim, Lapland, Antwerp, 14 bls., 4 cs.
Haule Wax Paper Manfg. Co., New York, Hamburg, 8 cs.
S. Gilbert, New York, Hamburg, 8 cs.

DECALCOMANIA PAPER

C. W. Sellers, G. Washington, Bremen, 18 cs.
C. W. Sellers, New York, Hamburg, 4 cs.
L. A. Consmiller, New York, Hamburg, 8 cs.

TISSUE PAPER

Old Master Paper & Pulp Corp., New York, Hamburg, 91 cs.
B. F. Drakenfeld & Co., Calgaric, Liverpool, 7 cs.
G. W. Sheldon & Co., American Trader, London, 2 cs.

PARCHMENT PAPER

Quality Art Novelty Co., New York, Hamburg, 2 bls.

LITHO PAPER

B. Meiners, Phemius, Canton, 5 cs.

SURFACE COATED PAPER

P. C. Zuhlke, Winifredian, Antwerp, 105 cs.
Gevaert Co. of America, Winifredian, Antwerp, 50 cs.
Globe Shipping Co., Ryndam, Rotterdam, 12 cs.
P. C. Zuhlke, Lapland, Antwerp, 34 cs.
Whiting & Patterson Co., Inc., New York, Hamburg, 3 cs.

BARYTA COATED PAPER

Globe Shipping Co., G. Washington, Bremen, 102 cs.
Globe Shipping Co., Dresden, Bremen, 13 cs.

GOLD COATED PAPER

F. Murray Hill, G. Washington, Bremen, 6 cs.

METAL PAPER

Hensel Bruckman & Lorbacher, New York, Hamburg, 2 cs.

COLORED PAPER

Borden Riley Paper Co., Winifredian, Antwerp, 4 cs.

DRAWING PAPER

Keuffel & Esser Co., New York, Hamburg, 29 cs.
H. Reeve Angel & Co., Inc., Minnekahda, London, 2 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., Minnekahda, London, 4 cs.

WRITING PAPER

The Eleto Co., Rochambeau, Havre, 12 cs.
Distinctive Writing Paper Co., Paris, Havre, 6 cs.

SULPHATE PAPER

Insight Paper Co., Bergensfjord, Frederickstad, 431 rolls.

STRAW BOARD

R. Wilson Paper Corp., Ryndam, Rotterdam, 202 rolls.
Perkins Goodwin & Co., Ryndam, Rotterdam, 178 rolls.
A. Vuyk, Ryndam, Rotterdam, 402 rolls.

MISCELLANEOUS PAPER

Japan Paper Co., Rochambeau, Havre, 1 cs.
F. S. Strype, Rochambeau, Havre, 12 pkgs.
F. J. Emmerich, Rochambeau, Havre, 4 cs.
Coenca Morrison Co., Rochambeau, Havre, 4 cs.
Judson Freight M'd'g Co., Rochambeau, Havre, 14 cs.
Steiner Paper Corp., Ryndam, Rotterdam, 9 cs.
P. C. Zuhlke, Lapland, Antwerp, 2 cs.
Walker Goulard Plehn Co., New York, Hamburg, 22 bls.
Tice & Lynch, Ausonia, London, 3 cs.
Perry Ryer & Co., Cameronia, Glasgow, 24 cs.
Portenoy Co., Paris, Havre, 3 cylinders.
Standard Products Corp., Paris, Havre, 36 cs.
Keller Dorian Paper Co., Paris, Havre, 22 cs.
R. F. Downing & Co., Andania, Liverpool, 2 cs.
H. Reeve Angel & Co., Inc., Dresden, Bremen, 4 bls.
C. K. MacAlpine & Co., Drottningholm, Gothenburg, 298 bls.
Walker Goulard Plehn Co., Drottningholm, Gothenburg, 4 bls.
E. H. Sergeant & Co., Drottningholm, Gothenburg, 6 cs.
Freedman & Slater, Thuringia, Hamburg, 3 cs.

RAGS, BAGGING, ETC.

E. J. Keller Co., Inc., Vincent, Dunkirk, 149 bls. rags.
Castle & Overton, Inc., Vincent, Dunkirk, 110 bls. rags.
Bank of America, Vincent, Dunkirk, 95 bls. rags.
Darmstadt Scott & Courtney, Vincent, Dunkirk, 39 bls. rags.
Salomon Bros., Inc., Vincent, Dunkirk, 85 bls. rags.
V. Galaup, Vincent, Havre, 66 bls. rags.
D. I. Murphy, Vincent, Havre, 591 bls. rags.
Castle & Overton, Inc., Vincent, Havre, 83 bls. bagging.
Chemical National Bank, Cabo Espartel, Valencia, 96 bls. rags.
E. J. Keller Co., Inc., Ryndam, Rotterdam, 44 bls. rags.
Castle & Overton, Inc., Ryndam, Rotterdam, 3 bls. rags.
M. Snedeker Corp., Clairton, Belfast, 69 bls. paper stock.
Castle & Overton, Inc., Clairton, Manchester, 52 bls. bagging.
N. Y. Trust Co., Lepanto, Hull, 80 bls. rags.
Union National Bank, Lepanto, Hull, 37 bls. rags; 49 bls. bagging.
Royal Manfg. Co., Lepanto, Antwerp, 144 bls. bagging; 50 bls. thread waste.
Equitable Trust Co., Lepanto, Antwerp, 67 bls. bagging.
E. J. Keller Co., Inc., Lepanto, Hull, 49 bls. bagging; 117 bls. rags.
A. Vernesse, Lepanto, Antwerp, 84 bls. bagging.
National City Bank, Lepanto, Antwerp, 107 bls. bagging.
Castle & Overton, Inc., Lepanto, Antwerp, 211 bls. bagging.
Tradesmens National Bank, Lepanto, 166 bls. rags.
W. Schall & Co., Lepanto, Antwerp, 345 bls. bagging.
Phila. Girard National Bank, Lepanto, Antwerp, 157 bls. rags.
P. Berlowitz, Lepanto, Antwerp, 207 bls. rags.
Castle & Overton, Inc., Lepanto, Antwerp, 80 bls. bagging.
A. H. Searle, Inc., Cameronia, Glasgow, 121 bls. paper stock.
Darmstadt Scott & Courtney, Cameronia, Glasgow, 53 bls. paper stock.
Bank of New York, West Arrow, Rotterdam, 9 bls. flax waste; 12 bls. rags.
E. J. Keller Co., Inc., West Arrow, Rotterdam, 19 bls. thread waste.
Baring Bros. & Co., Mercian, Manchester, 24 bls. cotton waste.
R. F. Downing & Co., Mercian, Manchester, 37 bls. rags.
Royal Manfg. Co., Mercian, Manchester, 70 bls. cotton waste.
Goschens & Cunliffe, Mercian, Manchester, 60 bls. bagging; 50 bls. rags.
Castle & Overton, Inc., Andania, Liverpool, 73 bls. bagging.
Mutnick Bros., Andania, Liverpool, 18 bls. rags.
D. M. Hicks, Inc., Waukegan, Havre, 99 bls. rags.
V. Galaup, Waukegan, Havre, 75 bls. rags.
Cohen Son, Waukegan, Havre, 17 bls. rags.
Salomon Bros. & Co., Waukegan, Havre, 14 bls. rags.
Darmstadt Scott & Courtney, Waukegan, Dunkirk, 73 bls. rags.
The Barrett Co., Ambridge, Rotterdam, 189 bls. rags.
Castle & Overton, Inc., Ambridge, Rotterdam, 128 bls. bagging.
Basch & Greenfield, American Trader, London, 5 bls. rags.
E. J. Keller Co., Inc., Saco, Antwerp, 75 bls. bagging.
G. W. Millar & Co., West Eldara, Antwerp, 208 bls. rags.
Fidelity Trust Co., West Eldara, Antwerp, 43 bls. rags.
E. J. Keller Co., Inc., West Eldara, Antwerp, 200 bls. flax waste.
Salomon Bros. & Co., West Eldara, Antwerp, 47 bls. rags.
V. Galaup, West Eldara, Antwerp, 49 bls. bagging.
Equitable Trust Co., Thuringia, Hamburg, 403 bls. rags.
Evermann & Stern, Dresden, Bremen, 18 bls. rags.
E. J. Keller Co., Inc., Zeriba, ——, 37 bls. rags.

OLD ROPE

Brown Bros. & Co., Winifredian, Antwerp, 51 coils.
Brown Bros. & Co., Cabo Espartel, Huelva, 408 bls.
S. Birkenstein & Son, West Arrow, Rotterdam, 37 bls.

CASEIN

National City Bank, Lalande, Rosario, 589 bags.
T. M. Duche & Sons, Leland, Buenos Aires, 834 bags.
Champion Coated Paper Co., Lalande, Buenos Aires, 1,529 bags.
A. Klipstein & Son, Vincent, Havre, 352 bags, 30,000 kilos.
Kalkfleisch Corp., So. Cross, Buenos Aires, 1,084 bags.
T. M. Duche & Sons, Capillo, Buenos Aires, 417 bags, 25,020 kilos.
Champion Coated Paper Co., Capillo, Buenos Aires, 1,553 bags, 157,990 kilos.

WOOD PULP

Castle & Overton, Inc., Nordvard, Hamburg, 394 bls. wood pulp, 20 tons.

(Continued on page 74)

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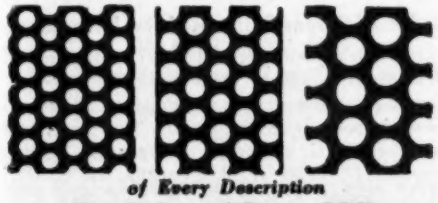

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Mine Gulf, Matagorda County, Texas

Imports of Paper and Paper Stock

(*Continued from page 72*)

E. J. Keller Co., Inc., Ryndam, Rotterdam, 300 bls. wood pulp.
Pagel Horton & Co., Inc., New York, Hamburg, 1,000 bls. wood pulp, 101 tons.
Bulkley Dunton & Co., New York, ——, 285 bls. wood pulp, 57 tons.
Pagel Horton & Co., Inc., Consul Olsson, Gefle, 2,250 bls. wood pulp, 457 tons.
Bulkley Dunton & Co., Consul Olsson, ——, 16,350 bls. wood pulp, 3,277 tons.
Perkins Goodwin & Co., Bergensfjord, Oslo, 300 bls. chemical pulp; 250 bls. sulphite pulp.
Atterbury Bros., Inc., Bergensfjord, Oslo, 750 bls. wood pulp.
Chemical National Bank, Bergensfjord, Oslo, 810 bls. sulphite pulp.
Atterbury Bros., Inc., H. Olav, Oslo, 500 bls. wood pulp.
E. J. Keller Co., Inc., Dresden, Bremen, 1,000 bls. wood pulp.
Scandinavian Pulp Agency, Inc., Drottningholm, Gothenburg, 102 bls. sulphite.
Castle & Overton, Inc., Thuringia, Hamburg, 367 bls. wood pulp, 55 tons.
Bulkley Dunton & Co., Boschdyk, ——, 800 bls. wood pulp.

WOOD PULP BOARDS

C. B. Hewitt & Bros., Ambridge, Rotterdam, 5 bls.
C. K. MacAlpine & Co., Drottningholm, Gothenburg, 31 bls.

BALTIMORE IMPORTS

WEEK ENDING FEBRUARY 4, 1928

G. M. Graves Co., Hoxie, Dublin, 218 bls. rags.
Congoleum Nairn Co., Vincent, Dunkirk, 48 bls. rags.
V. Galaup, Vincent, Dunkirk, 309 bls. rags.
C. B. Richard & Co., Vincent, Dunkirk, 416 bls. rags.
Castle & Overton, Inc., Vincent, Havre, 210 bls. rags.
V. Galaup, Vincent, Havre, 386 bls. rags.
Congoleum Nairn Co., Vincent, Havre, 72 bls. bagging; 64 bls. rags.
Acer & Co., Buchannes, Port Alice, 6,375 bls. wood pulp.
Congoleum Nairn Co., West Eldara, Antwerp, 128 bls. rags.
Equitable Trust Co., West Eldara, Antwerp, 168 bls. rags.
2nd National Bank of Boston, West Eldara, Antwerp, 161 bls. rags.
Woodpulp Service Corp., Stureholm, Gothenburg, 250 bls. sulphite.
Castle & Overton, Inc., Idarwald, Germany, 1,774 bls. wood pulp.
Bulkley Dunton & Co., Altmark, ——, 500 bls. wood pulp.
Bulkley Dunton & Co., Holstein, ——, 2,250 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING FEBRUARY 4, 1928

E. J. Keller Co., Inc., Eastern Dawn, Antwerp, 62 bls. rags.

PHILADELPHIA IMPORTS

WEEK ENDING FEBRUARY 4, 1928

E. Butterworth & Co., Inc., West Arrow, Rotterdam, 20 bls. rope.
Green Hamilton & Co., West Arrow, Rotterdam, 102 bls. thread waste.
S. E. Ingber & Co., West Arrow, Rotterdam, 150 bls. rags.
Castle & Overton, Inc., West Arrow, Rotterdam, 72 bls. rags.
Bulkley Dunton & Co., West Arrow, Rotterdam, 38 bls. rags.
Salomon Bros. & Co., Waukegan, Havre, 109 Bls. rags.
E. J. Keller Co., Inc., Waukegan, Havre, 532 bls. rags.
A. W. Fenton, Inc., Waukegan, Havre, 83 bls. rags.
V. Galaup, Waukegan, Havre, 126 bls. rags.
M. Freidman, Waukegan, Havre, 25 bls. rags.
Stephano Bros. & Co., Waukegan, Havre, 20 cs. cigarette paper.
Salomon Bros. & Co., Waukegan, Dunkirk, 229 bls. rags.
V. Galaup, Waukegan, Dunkirk, 33 bls. rags.
Brown Bros. & Co., Saco, Antwerp, 18 bls. rags.
A. J. Holman & Co., Saco, Antwerp, 69 cs. printing paper.
Phila. Girard National Bank, Saco, Antwerp, 43 bls. rags.
V. Galaup, Saco, Antwerp, 236 bls. rags.
A. Bloch & Co., Saco, Antwerp, 72 bls. bagging.
Equitable Trust Co., Saco, Antwerp, 119 bls. rags.
Tradesmens National Bank, Saco, Antwerp, 27 bls. rags.
Castle & Overton, Inc., Saco, Antwerp, 233 bls. rags.
E. J. Keller Co., Inc., Chelma, ——, 137 bls. rags.
E. J. Keller Co., Inc., Sangamon, ——, 872 bls. rags.
Castle & Overton, Idarwald, Germany, 180 bls. rags.
Bulkley Dunton & Co., Bellephine, ——, 155 bls. rags.

BOSTON IMPORTS

WEEK ENDING FEBRUARY 4, 1928

Colonial Shawmut Bank, Lepanto, Antwerp, 140 bls. wrapping paper.
American Exchange Irving Trust Co., Lepanto, Antwerp, 47 bls. bagging.
Chemical National Bank, Lepanto, Antwerp, 190 bls. rags.
E. J. Keller Co., Inc., Lepanto, Antwerp, 47 bls. rags.
Castle & Overton, Inc., Saco, Antwerp, 21 bls. rags.
Castle & Overton, Inc., West Arrow, Holland, 72 bls. rags.
E. J. Keller Co., Inc., Beemsterdyk, Rotterdam, 174 bls. rags.
E. J. Keller Co., Inc., K. Luckenbach, ——, 400 bls. rags.
Bulkley Dunton & Co., Innaren, ——, 3,345 bls. wood pulp.
Bulkley Dunton & Co., West Campgaw, 250 bls. wood pulp.

G. W. Gilkey Heads Michigan Paper Co.

KALAMAZOO, Mich., February 6, 1928.—George W. Gilkey, formerly secretary, treasurer and general manager of the Michigan Paper Company, Plainwell and Kalamazoo, was elected president and treasurer of the concern at the annual meeting of the stockholders and directors. This was a tribute to Mr. Gilkey's executive ability. Under his management this company has made excellent progress.

The stockholders also paid tribute to the long and faithful services of William Thomas, who during his active business life was general superintendent of the plant, by naming him director emeritus. Another step taken was acceptance of the resignation of E. A. Stowe, Grand Rapids, as director. He has for years been counted a valuable member of the board.

To fill these two vacancies, W. J. Lawrence, Kalamazoo and E. M. Stone, Allegan, were made directors. Those on the board re-elected were H. Clare Jackson, Kalamazoo; G. W. Gilkey, J. B. Wagner, H. J. Mesick, Plainwell; George M. Ames, Grand Rapids; B. D. Kepple, Henry Pilgrim, Holland. J. B. Wagner was elected vice president and J. C. Handry, secretary.

Boosting the Airmail Service

PORTLAND, Ore., February 3, 1928.—A. A. McFarland, manager of the Portland Envelope Company, Portland, has taken a unique way of keeping his product before business men of the city. Each week at the Members' Forum of the Chamber of Commerce he presents to each guest at the luncheon a box containing twenty-five airmail envelopes. Thus he helps to boost his own factory and the airmail service of the Pacific northwest.

Big Order for Sulphite Digesters

The Consolidated Water Power and Paper Company, Wisconsin Rapids, Wis., has recently placed an order with the Biggs Boiler Works Company, Akron, Ohio, for nine large sulphite digesters 14 feet diameter by 40 feet long made of 1⅛ inch steel plate. These digesters are for the Consolidated Water Power and Paper Company's plant at Appleton, Wis., and this is said to be the largest single order for digesters placed by any plant or mill for many, many years. Some of the old paper makers in Wisconsin may recall a similar order placed by the late Grover Cleveland and Robert (Fighting Bob) J. Evans for eight 13 by 40 feet digesters in 1890. These were installed at Interlake, Wis., and it is understood that some of the men are still with the Consolidated Water Power and Paper Company who were active at the time this installation was made.

Allied Paper Mills Reduce Directors

KALAMAZOO, Mich., February 6, 1928—The directors of the Allied Paper Mills was reduced from 16 to 15 in number at Wednesday's annual meeting of the stockholders. J. W. Thompson, Detroit, was dropped from the board. The directors re-elected are: Mrs. Florence G. Anderson, Otsego; A. L. Pratt, Paris, France; George D. Cobb, A. B. Connable, G. S. Davis, C. A. Dewing, J. H. Dewing, A. E. Kettle, W. E. Kidder, S. B. Monroe, J. A. Pyl, E. G. Read, G. W. Ritchie, A. G. Gilman and H. L. VanderHorst, Kalamazoo.

The election of officers was deferred to the February monthly meeting of the directors. A very satisfactory report was presented covering the business for the past year.

BOLTON QUALITY

JOHN W. BOLTON & SONS, INC.

EAGLE KNIFE & BAR WORKS

Lawrence, Mass.

The only firm making KNIVES for every machine from wood pile to finishing room.

It's the KNIVES that do the work!

Pulp and Paper Mills, Power Plants, Chemical Plants

Engineering Design
Construction Supervision
Mechanical Equipment
Surveys
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Management
Process Development
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Arthur D. Little, Inc.

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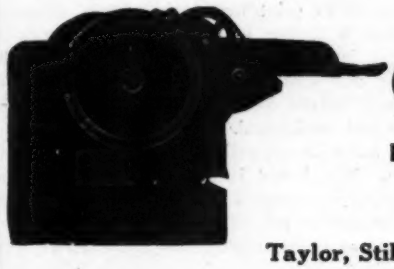

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Plans and Specifications
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Ham Feltz says:

"My notion of a perfect felt wuz one that wuz leaky as a sieve to let the water out and at the same time as tough as a Rhino hide to stand the gaff. And 'tis accordin' to yur ol' frend Ham Feltz's observin' and experience. the felt nearest approachin' this perfection is a Hamilton Wet Felt—leaky as a fish net and tough as life itself."

Hamilton Felts

New York Market Review

Office of THE PAPER TRADE JOURNAL,
Wednesday, February 8, 1928.

The volume of business transacted in the local paper market during the past week was fairly satisfactory. The various grades of paper continue in seasonal request. Sales organizations of the leading paper houses are anticipating a heavy spring trade and the outlook for the future is encouraging.

The position of the news print market is sound. Demand continues persistent and a further expansion of cinsumption is looked for in the near future by competent authorities on the industry. Advertising and circulation figures are reported to be improving by many of the leading publications. Contract prices remain steady and unchanged.

Demand for paper board is expanding and the market is in an excellent position. Box board is in particularly good request. Prices of the various grades remain unaltered. Some improvement was recorded in the fine paper market. Tissues remain quiet. The coarse paper market was fairly active during the week and the interest in wrapping paper is being well maintained.

Mechanical Pulp

The ground wood market is practically unchanged. Supplies of both imported and domestic mechanical pulp are ample for current requirements and there are no undue accumulations. Inquiries for future business are fairly frequent. Prices continue to hold to schedule, in most instances, and there is little shading.

Chemical Pulp Market

Although the pulp mill lockout in Sweden has not affected prices materially as yet, the chemical pulp market is becoming much firmer. At the present time the situation is regarded as serious and it is difficult to predict how long the conflict between the workers and the employers will last. Supplies continue to move into consumption at a normal pace, taking everything into consideration.

Old Rope and Bagging

Domestic old rope is in steady request while imported old rope is also arousing more interest than of late. Foreign manila rope is now offered at from 3.00 to 3.10. Small mixed rope is selling at from 1.25 to 1.40. The bagging market was moderately active during the week. Prices are mostly being maintained at previously quoted levels.

Rags

More mill interest is developing in the rag market. New cuttings are in excellent demand and, as offerings are rather limited, prices are firm. Roofing rags are also in good request, while most of the other grades remain steady. There is little change in the foreign rag situation and prices abroad are still considered too high.

Waste Paper

The waste paper market is showing signs of improvement now that the inventory period is out of the way. Inquiries from the mills are more frequent and the paper stock dealers are gradually becoming more optimistic. Book and ledger stocks are in particularly good request. Prices of the various grades are generally steady and unchanged.

Twine

Most of the business transacted in the twine market was along routine lines during the past week. With the approach of the spring season greater activity is predicted in some quarters. The volume of supplies moving into consumption of late has been satisfactory. Prices are generally holding up to schedule.

Water for Grays Harbor Pulp & Paper Co.

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., February 6, 1928.—Baar & Cunningham, engineers of Portland, have been commissioned to draw plans for a seven-mile water tunnel to furnish water for the new plant of the Grays Harbor Pulp and Paper Company in Hoquiam, Wash. The mill is expected to be in operation in July of this year and it is the plan of the engineering company to have the water system completed ready for use at that time. Seven miles of pipe sufficiently large to serve the need is to be laid.

It was at first thought that the city of Hoquiam could furnish enough water for the paper mill supply, but the Grays Harbor Company decided that an additional system would be necessary, and for this reason the new plans are to be rushed.

Stimulating Interest in Paper Week

Interest in the forthcoming Annual Convention of the American Paper and Pulp Association at the Waldorf-Astoria Hotel, New York, February 20-23, is being stimulated by a series of leaflets which are being broadcasted to members of the industry.

Illustrated with timely sketches, cleverly worded, and printed on Mardi Gras paper, these attractive leaflets should undoubtedly play their part in attracting a record attendance for Paper Week.

Headquarters for Waxed Paper Association

On and after February 15 the headquarters of the American Waxed Paper Association will be located at 342 Madison Avenue, New York. The office will be in charge of Paul S. Hanway, recently appointed manager and treasurer.

New Superintendent of Sidney Roofing Co.

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., February 3, 1928.—Fred N. Sievers, who is known in Oregon through his former connection with the West Linn plant of the Crown-Willamette Company, is now superintendent of the Sidney Roofing and Paper Company at Victoria, B. C.

Pulp Testing Committee Approves Ivar Lundbeck

The Joint Committee on Approved Pulp Testing Chemists for the paper industry of the United States has recently approved for listing, Ovar Lundbeck, of the Lee Paper Company, Vicksburg, Michigan.

SHIPPING INSURANCE

The Use of

ELIXMAN CORES

protects your rolls and insures their delivery to your customer in perfect condition. They eliminate claims for damages.

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Your two sources of supply are

Canadian Elixman Company
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"Ask Your Neighbor What He Thinks of Them"

109 JENSSEN

Two-Tower Acid Systems now in operation or building.

Jenssen Spray Type Cooler
Bullard Gas Washer
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Kamyr Feltless Machines
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Strindlund Relief Cooler

G. D. Jenssen Company
200 5th Ave. New York, N. Y.

1500 HOURS AND MORE ON GLASSINE

This is the record being made by Butterworth Calender Rolls in some of the largest paper mills of the country. For super, glassine and coated.

H. W. BUTTERWORTH & SONS CO.

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Manufacturers of

SUPERCALENDERED and MACHINE FINISHED BOOK and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Cover and Music Paper, High Grade Coated Book, Index Bristol, Post Card, Kraft and Label Papers.

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WOODPULP AGENTS

PRICE & PIERCE, Ltd.,

17 EAST 42ND ST.

NEW YORK

Miscellaneous Markets

Office of THE PAPER TRADE JOURNAL,
Wednesday, February 8, 1928.

Trading in the local chemical market was moderately active during the past week, most of the contract business for the current year having already been booked. Supplies continue to move into consumption in a satisfactory manner. Prices of the various paper makers' chemicals are practically unchanged and reports of shading are infrequent.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Consumers are inclined to limit orders to immediate requirements. Prices remain unaltered. The pulp is still quoted at $60 per ton, in bulk, while the powder is selling at from 4 cents to 4¼ cents a pound, in barrels, at works.

BLEACHING POWDER.—Steadiness continues to prevail in the bleaching powder market. This product is in excellent request at present and large shipments are being made on contract. Prices are unaltered. Bleaching powder is selling at from $2 to $2.35 per 100 pounds, in large drums, at works, according to quantity and size of contract.

CASEIN.—Conditions in the casein market are practically unchanged. Demand for both the domestic and the imported product is fairly satisfactory at present and supplies are about sufficient to take care of prevailing requirements. Imported casein is still quoted at from 18 cents to 18½ cents a pound, in bags, car lot quantities, while the domestic product is selling at the same rate.

CAUSTIC SODA.—Contract shipments of caustic soda are going forward at a satisfactory rate. Consumption has been heavy of late and the market is firm. Prices are steady and unchanged. Caustic soda is selling at from $2.90 to $2.95 per 100 pounds. The flake and the ground are quoted at from $3.30 to $3.35 per 100 pounds, in large drums, at works.

CHINA CLAY.—Both imported and domestic paper makers' clay were in fairly good request during the week. Supplies are moving into consumption at a steady pace. Prices are unaltered. English china clay is still quoted at from $15 to $25 a ton, in bulk, ship side. Domestic paper makers' clay is offered at from $8 to $9 a ton, at mine, and pulverized at from $10 to $12 a ton.

CHLORINE.—The chlorine market is exhibiting a strong undertone. The movement against contract has been very satisfactory of late. Quotations remain unchanged. Chlorine is selling at 3½ cents a pound, in tanks, or multi-unit cars, at works, on contract orders. The spot quotation ranges from 3¾ cents to 4 cents a pound.

ROSIN.—Some slight improvement was noticed in the rosin market last week. Demand was more brisk and prices advanced imperceptibly. At the naval stores, the grades of gum rosin used in the paper mills are now quoted at from $9.50 to $9.90 per 280 pounds, ex dock, in barrels. Wood rosin is selling at $7.25 per 280 pounds, southern shipping points.

SALT CAKE.—The salt cake market continues in a sound position. Demand for this product was persistent during the past week. Prices are being well maintained. Salt cake is quoted at from $18 to $19 a ton, in bulk, at works. Chrome salt cake is offered at from $14 to $15 a ton, in bulk, at works.

SODA ASH.—Manufacturers of soda ash are operating at sufficient capacity to take care of current needs. Contract withdrawals continue to move in heavy volume. Prices are holding up to previously quoted levels. Contract prices of soda ash, in car lots, at works, rule as follows: in bags, $1.32, and in barrels, $1.55.

STARCH.—The undertone of the starch market is sound. Demand from the paper mills is about normal for the time of the year. Recent advances are holding without difficulty. Special paper makers' starch is still selling at $3.32 per 100 pounds, in bags, and at $3.59 per 100 pounds, in barrels.

SULPHATE OF ALUMINA.—Consumption of sulphate of alumina is proceeding in satisfactory volume and the tendency of the market is firm. Contract shipments continue to move in excellent volume. Quotations are holding up very well. Commercial grades of sulphate of alumina are offered at from $1.40 to $1.45 per 100 pounds, in bags, at works. The iron free is selling at from $2 to $2.05 per 100 pounds, in bags, at works.

SULPHUR.—Business in the sulphur market is normal for the season. Demand is well sustained and prices are generally steady and unchanged. Supplies are moving into consumption at a steady pace. Sulphur is quoted at from $18 to $19 a ton, in bulk, at mine, according to quantity. The spot quotation is $20 a ton.

TALC.—Most of the business transacted in the talc market during the past week. Contract withdrawals are moving readily and prices are holding up to previous levels. The quotations on domestic talc range from $16 to $18 a ton, in bulk, at eastern mines. French talc is offered at from $18 to $22 a ton, in bags, ship side.

Yorkshire Corrugated Box Co. Absorbed

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., February 6, 1928.—The Albany Corrugated Container Corporation, recently organized and chartered under State laws, has absorbed the Yorkshire Corrugated Box Company, the transaction becoming effective this week. Claude C. Nuckols is president of the new corporation, Joseph A. Seery is vice president and Cornell S. Hawley, president of the Consolidated Car Heating Company, is secretary. The officers, with Judge Daniel J. Dugan and Thomas I. Van Antwerp, president of the National Commercial Bank, form the board of directors.

The Yorkshire Corrugated Box Company was established only recently by Joseph A. Seery, veteran of the wood shipping box industry, and Judge Daniel J. Dugan, of Albany County Juvenile Court. Finding the field unexpectedly fertile for such an enterprise they interested Mr. Nuckols and his associates and the firm was reorganized as the Albany Corrugated Container Corporation.

The company has a fully equipped plant in the old Thacher foundry which will have a capacity production of 1,200 carloads of corrugated fiber board boxes a year, employing 25 hands. Orders guaranteeing capacity production are already on the books, it is said.

As part of the refinancing plan 1,000 shares of non par value stock on the basis of a nominal value of $100 was issued. No stock is outstanding, it was said, and there will be no other financing.

President Nuckols of the corporation said that the company will manufacture fiber board paper to be used in the construction of corrugated shipping containers in any dimensions or shapes specified by the user. He expressed the belief that the bulk of the new company's product will be used by firms in the Capitol District and delivery within 100 miles of Albany will be made by truck. He declared that the paper box industry has reached $100,000,000 annually in the United States and is growing steadily larger.

T. F. Hart Paper Mill Sold

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., February 6, 1928.—The sale of the T. F. Hart Paper Company's plant and real estate at Albany, Ind., to the Bahr Refiners Paper Corporation, just formed, was made public through the filing for record of the transfer of the real estate holdings and the articles of incorporation. The plant has been inactive for some time. It was operated formerly by T. F. Hart, a Muncie manufacturer. The Bahr company is newly organized and is composed entirely of business men of Marion, Ind. It starts with a capital stock of $50,000 common stock, all paid in. It will manufacture, buy, sell and deal in paper products, box boards and similar merchandise. The principal place of business will be at Albany. The incorporators are A. F. Bahr, O. B. Bahr, W. F. Bahr and Charles A. Bahr and Sam W. Bahr. The capital stock of the corporation has been divided into 500 shares of $100 par value each.

The Lindsay Wire Weaving Co.

14025 Aspinwall Avenue, Cleveland, Ohio

Manufacturers of

LINDSAY LONGCRIMP AND SPIRAL WEAVE FOURDRINIER WIRES

These wires are making records in large production of paper

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On Offset paper SILICATE Lays the fuzz

Offset paper needs to have a good printing surface and a smooth finish, free of fuzz. Mills that use silicate of soda of the right kind, know the improvements of a sheet sized with silicate over one unsilicated. "A-Syrup" silicate added to the beater for offset paper, gives it a smooth finish, improves its properties for printing inks, and makes it non-curling. May we help you with your problem?

Philadelphia Quartz Co.

SILICATE HEADQUARTERS
PHILADELPHIA

Prompt deliveries made from stocks in
NEW YORK
BOSTON
PHILADELPHIA
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TRADE MARK

Quality Speaking—

from station Heller & Merz. Colors that stand up to the job. Service that delivers the goods when and where you want them. Dyers! Tune in on satisfaction.

The HELLER & MERZ COMPANY
505 Hudson St., New York

Boston 287 Atlantic Ave. | Chicago 146 W. Kinzie St. | Philadelphia 114 Market St.

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Factory—NEWARK, N. J.

Clay

300 tons daily

AMERICAN MADE FOR AMERICAN TRADE

AT LAST!!

"An American Coating Clay"

H. T. Brand Coating Clay, Highest Grade Filling Clay, being used in some of the largest paper mills in the country. Send for samples and article on *"An American Coating Clay."* Forty-two years experience in American washed clays are back of this product.

Let us submit sample and quote you.

THE
EDGAR BROS. CO.
50 Church St.,
NEW YORK

Market Quotations

Quoted by Hepburn & Co., 74 Broadway, N. Y. City, to whom all inquiry for quotations on these or any other Securities is referred.

BONDS	BID	OFFERED
Advance Bag & Paper, 7s 1943	105	107
A. P. W. Pulp & Power, 7s 1945	101	102
American Writing Paper, 6s 1947	80	82
Bastrap Pulp & Paper, 6½s 1940	100	103
British Columbia Pulp & Paper, 6s 1950	85	90*
Beaver Products Corp., 7½s 1942	106	109
Bedford Pulp & Paper, 6½s 1942	98½	None
Brown Paper Co., 1st 5½s 1946	96½	99
Bryant Paper Co., 6s 1942	100½	102
Cape Breton Pulp & Paper, 6s 1932	101	103
Central Paper, 7s 1933	85	None
Central Paper Serial 6, 6½s 1942	89	...
Champion Coated Paper, 6s 1926 to 1932	99	...
Champion Fibre, 8s 1930	100	...
Champion Paper Corp'n, 1st 6s 1945	95	97
Continental Paper Products, 6½s 1943	88	91½
Cornell Wood Prod., 7½s 1937	100	104*
Crown Willamette Paper, 6s 1951	100	102
Donnaconna Paper, 6s 1940	101	102½
Dells Paper & Pulp Serial, 6s 1926-38	*95	...
Eastern Mfg. Co., 7s 1938	89	91
Eddy Paper, 7½s 1931	101	103
Escanaba Paper Serial, 6s 1928	99¾	...
Filer Fibre Serial, 7s 1926-39	95	...
Fort Orange Paper, 7s 1942	99	102
Fox River Paper, 7s 1931	99	...
Gair Company, 5½s 1942	96	99
Gilbert Paper Co., 6½s 1926-29	91	None
Hammermill Paper, 6s 1939	100	103*
Hoberg Paper & Fibre, 7s 1937	94½	96
Itaska Paper & Prairie River Power, J+5½s 1926-38	99	101
Itaska Paper, 1st 6s 1933-38	99	101
Kalamazoo Veg. Parchment, 6s 1938	98	...
Marinette & Menominee, 7½s 1936	100	103
Menasha Printing & Carton, 6½s 1939	99½	...
Monroe Paper Products, 7½s 1932	96	...
Munising Paper, 6s 1927-36	96	100
Nekoosa Edwards, 1st Ref. 6s 1928 to 1942	96	99*
Orono Pulp & Paper, 6s 1943	98	...
Orono Pulp & Paper, 5s 1941	94	...
Oswego Falls Corp., 6s 1941	98	100*
Oxford Paper, 6s 1947	104	...
Paepcke Paper Mills, 7s 1930	99	None
Parsons Pulp & Lumber, 7s 1928	97	...
Parker Young Co., 6½s 1944	96½	98½
Paterson Parchment Paper, 6s 1938	100½	102
Penobscot Chemical Fibre, 6s 1942	98	...
Queens City Paper, 7s 1932	95	100*
Richardson Co., 6s 1938	100	...
River Raisin Paper, 6s 1936	96	...
Spanish River Pulp & Paper, 8s 1941	108	110
Stevens & Thompson Paper, 6s 1942	93	95
St. Anne Paper, 6½s 1946	99	101
St. Croix Paper, 5s 1926-37	95	98*
St. Regis Paper Serial, 6½s 1926-35	99½	101
Tait Paper & Color Industries, 6s 1934	90	95
Taggart Bros. Co., 6s 1944	95	97
Ticonderoga Pulp & Paper, 5s 1930	94	98
Ticonderoga Pulp & Paper, 6s 1940	99	101
Warren (The S. D.) Company, 6s 1945	99	101
Wotab Paper, 6½s 1943	102	...
Westfield River Paper, 7s 1926-43	91	...
Whitaker Paper, 7s 1942	106	108

STOCKS	BID	ASKED
American Box Board, Pfd.	8	10
American Box Board, Com.	8	10
Am. Tissue Mills, 7% Pfd.	90	93
British Columbia P. & P., Pfd.	54	58
Brompton Pulp & Paper, 8% Pfd.	100	102
Brown Corpn., 7% Pfd.	100	104
Champion Fibre, 7% Pfd.	106	112
Diem & Wing, 7% Cum. Pfd.	90	...
Eastern Mfg. Co., 1st Pfd.	28	33
Great Northern Paper, Com.	70	75
Hammermill Paper, 7% Pfd.	105	110
Hinde & Dauch, Com.	135	...
Hinde & Dauch, Pfd.	100	...
Holyoke Card & Paper	160	None
Marathon Paper Mills, Com.	125	...
Midwest Box Co., Pfd. 8%	94	98
Midwest Box Co., Pfd. 6%	92	97
Louis De Jonge Co., 7% Pfd.	93	96
Oxford Papers, Com.	160	170
Oxford Paper Co., Pfd.	105	108
Penobscot Chemical Fibre, Com.	65	75*
Richardson, 7% Pfd.	160	...
Rubberoid	74	77
Seaman Container, Class B (par $1)	1	None Off.
Seaman Paper Co.	Wanted	None Off.
St. Croix Paper	150	170
St. Regis Paper Co., 7% Cum. Pfd.	101½	104½
Westfield River Paper Co., 1st Pfd.	Wanted	None Off.
West Virginia Pulp and Paper, Com.	50	55
West Virginia Pulp & Paper, Pfd.	101	103
Whittaker Paper, 7% Cum. Pfd.	98	103

* Nominal.

Paper

(F. o. b. Mill)

Ledgers	11.00	@38.00
Bonds	9.00	@45.00
Writings—		
Extra Superfine	14.00	@32.00
Superfine	14.00	@32.00
Tub sized	10.00	@15.00
Engine Sized	8.00	@11.00
News—		
Rolls, contract	3.25	@ —
Rolls, transient	3.25	@ 3.50
Sheets	3.65	@ 3.85
Side Runs	3.00	@ 3.75
Book, Cased—		
S. & S. C.	6.35	@ 7.75
M. F.	6.25	@ 7.75
Coated and Enamel	8.00	@15.00
Lithograph	8.00	@15.00
Tissues—Per Ream—		
White No. 1	.75	@ 1.00
Anti-Tarnish	1.10	@ 1.90
Colored	1.00	@ 2.00
White No. 2	.75	@ .85
Kraft	.90	@ 1.00
Manila	.75	@ .85
Kraft—		
No. 1 Domestic	6.25	@ 6.50
No. 2 Domestic	4.50	@ 4.75
Southern	4.25	@ 4.50
Imported	6.50	@ 7.00
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.75	@ 5.25
No. 2 Wood	4.00	@ 4.50
Butchers	3.75	@ 4.25
Fibre Papers—		
No. 1 Fibre	5.00	@ 5.50
No. 2 Fibre	4.75	@ 5.25
Common Bogus	2.75	@ 3.00
Screenings	3.00	@ 3.25
Card Middles	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs.	13.00	@16.00
Bleached, basis 20 lbs.	15.00	@16.00

(Delivered New York)

Boards—per ton—		
News	47.50	@50.00
Straw	53.50	@57.50
Chip	45.00	@47.50
Binders' Boards	70.00	@75.00
Sgl. Mla. Ll. Chip	57.50	@60.00
Wood Pulp	80.00	@85.00
Container	67.50	@72.50

Mechanical Pulp

(Ex-Dock)

No. 1 Imported—		
Moist	28.00	@30.00
Dry	32.00	@34.00

(F. o. b. Mill)

No. 1 Domestic	26.00	@30.00
Screenings	15.00	@20.00

Chemical Pulp

(Ex-Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	3.40	@ 4.25
Easy Bleaching	2.65	@ 2.80
No. 1 strong unbleached	2.40	@ 2.65
Mitscherlich unbleached	2.55	@ 3.25
No. 2 strong unbleached	2.30	@ 2.40
No. 1 Kraft	2.55	@ 2.75
No. 2 Kraft	2.40	@ 2.50
Sulphate—		
Bleached	3.65	@ 3.85

(F. o. b. Pulp Mill)

Sulphite (Domestic)—		
Bleached	3.20	@ 4.75
Easy Bleaching Sulphite	2.60	@ 2.75
News Sulphite	2.40	@ 2.65
Mitscherlich	3.25	@ 3.70
Kraft (Domestic)	2.60	@ 3.30
Soda Bleached	3.25	@ 3.50
Sulphate Screenings—		
Coarse	.75	@ .85
Refined	1.50	@ 1.85

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	11.75	@12.25
New White, No. 2	8.00	@ 8.50
Silesias No. 1	7.25	@ 7.75
New Unbleached	10.50	@11.00
Washables	4.25	@ 4.75
Fancy	5.50	@ 6.00
Blue Overall	6.75	@ 7.25
New Blue Prints	5.25	@ 5.50
New Soft Blacks	5.25	@ 5.75
Mixed Khaki Cuttings	4.75	@ 5.25
Pink Corset Cuttings	8.00	@ 8.50
O. D. Khaki Cuttings	5.25	@ 5.75
Men's Corduroy	3.75	@ 4.25
New Mixed Blacks	3.50	@ 3.75

Old Rags

White, No. 1—		
Repacked	5.50	@ 6.00
Miscellaneous	4.50	@ 5.00
White, No. 2—		
Repacked	3.00	@ 3.50
Miscellaneous	2.50	@ 2.75
St. Soiled, White	2.00	@ 2.15
Thirds and Blues—		
Repacked	2.25	@ 2.50
Miscellaneous	1.75	@ 2.00
Black Stockings	3.25	@ 3.75
Roofing Rags—		
Cloth Strippings	1.70	@ 1.80
No. 1	1.70	@ 1.80
No. 2	1.50	@ 1.60
No. 3	1.30	@ 1.40
No. 4	1.25	@ 1.35
No. 5A	.95	@ 1.05

Foreign Rags

New Light Silesias	7.00	@ 7.50
Light Flannelettes	7.50	@ 8.00
Unbleached Cottons	10.00	@11.00
New White Cuttings	10.50	@11.50
New Light Oxfords	7.00	@ 7.50
New Light Prints	5.50	@ 6.50
New Mixed Cuttings	3.00	@ 3.50
New Dark Cuttings	2.75	@ 3.25
No. 1 White Linens	7.25	@ 8.00
No. 2 White Linens	5.50	@ 6.25
No. 3 White Linens	4.50	@ 5.00
No. 4 White Linens	3.00	@ 3.50
Old Extra Light Prints	2.75	@ 3.25
Ord. Light Prints	2.25	@ 2.50
Med. Light Prints	1.90	@ 2.10
Dutch Blue Cottons	2.25	@ 2.50
German Blue Linens	2.50	@ 2.75
German Blue Cottons	2.00	@ 2.25
Checks and Blues	1.75	@ 2.00
Lindsay Garments	1.85	@ 1.95
Dark Cottons	1.65	@ 1.70
Shoppery	1.55	@ 1.60
French Blues	2.25	@ 2.50

Old Rope and Bagging

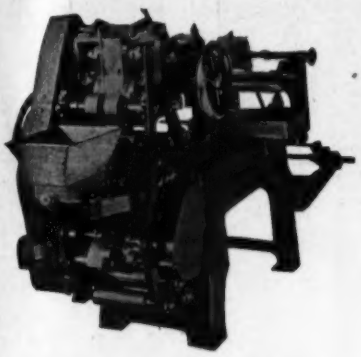
(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.65	@ 1.75
Domestic	1.70	@ 1.75
Wool Tares, light	1.60	@ 1.45
Wool Tares, heavy	1.60	@ 1.65
Bright Bagging	1.60	@ 1.65
Small Mixed Rope	1.25	@ 1.40
Manila Rope—		
Foreign	3.00	@ 3.10
Domestic	3.75	@ 4.00
New Burlap Cut	2.75	@ 3.00
Hessian Jute Threads—		
Foreign	3.50	@ 4.00
Domestic	3.25	@ 3.50

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, White, No. 1	3.40	@ 3.65
Hard, White, No. 2	2.90	@ 3.05
Soft, White, No. 1	2.75	@ 2.90
Flat Stock—		
Stitchless	1.40	@ 1.45
Overissue Mag.	1.40	@ 1.45
Solid Flat Book	1.30	@ 1.35
Crumpled No. 1	1.05	@ 1.10
Solid Book Ledger	1.90	@ 2.10
Ledger Stock	1.70	@ 1.75
New B. B. Chips	.65	@ .75
Manilas—		
New Env. Cut	2.40	@ 2.60
New Cuttings	1.60	@ 1.85
Extra No. 1 old	1.25	@ 1.35
Print	.85	@ .95
Container	.70	@ .80
Bogus Wrapper	.75	@ .85
Old Kraft Machine Compressed bales	1.95	@ 2.05
News—		
No. 1 White News	1.70	@ 1.80
Strictly Overissue	.80	@ .90
Strictly Folded	.55	@ .60
No. 1 Mixed Paper	.45	@ .50
Common paper	.30	@ .35



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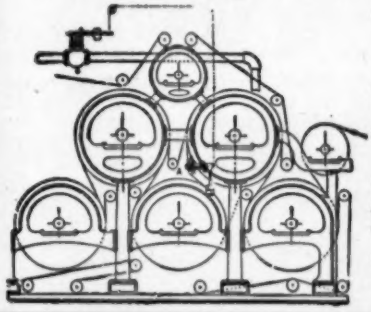

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Twines

(F. o. b. Mill)

Cotton—			
No. 1	.39	@	.40
No. 2	.37	@	.38
No. 3	.36	@	.37
A. C., 18 basis	.38	@	.40
A. B. Italian, 18 basis	.48	@	.53
Finished Jute—			
Dark 18 basis	.24	@	.25
Light 18 basis	.27	@	.28
Jute Wrapping, 3-6 Ply—			
No. 1	.21	@	.23
No. 2	.20	@	.22
Tube Rope—			
4-ply and larger	.18	@	.19
Fine Tube Yarn—			
5-ply and larger	.23	@	.27
4-ply	.24	@	.28
3-ply	.26	@	.30
Unfinished India—			
Basis	.16	@	.17
Paper Makers Twine			
Balls	.13	@	.15
Box Twine, 2-3 ply	.17	@	.19
Jute Rope	.21	@	.23
Ameri. Hemp, 6	.29	@	.31
Sisal Hay Rope—			
No. 1 Basis	.18	@	.20
No. 2 Basis	.16	@	.18
Sisal Lath Yarn—			
No. 1	.16	@	.18
No. 2	.14	@	.16
Manila Rope	.24	@	.26

CHICAGO

All Rag Bond	.35	@	.41
No. 1 Rag Bond	.25	@	.35
No. 2 Rag Bond	.14	@	.25
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
News—Roll, mill	.03½	@	.04¼
News—Sheets, mill	.03¾	@	.04¾
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	.05¾	@	.06¾
Southern Kraft	.04½	@	.05
No. 2 Kraft	.05	@	.05¼
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue—			
24x36 Sheet	.07	@	.07¾
White Tissue—			
20x30 Sheet	.07¼	@	.07½
Boards, per ton—			
(Delivered Central Territory)			
Plain Chip	45.00	@	—
Solid News	47.50	@	—
Manila Lined Chip	55.00	@	—
Container Lined—			
(Delivered Central Territory)			
85 Test	65.00	@	70.00
100 Test	70.00	@	—

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.80	@	2.90
White Env. Cuttings	3.60	@	3.70
No. 1 Soft Shavings	2.50	@	2.60
No. 1 Mixed	1.00	@	1.05
No. 2 Mixed	.90	@	1.00
Ledger & Writings	1.55	@	1.65
Solid Books	1.20	@	1.30
Blanks	1.70	@	1.80
Krafts	1.90	@	2.00
New Kraft Cuts	2.25	@	2.35
Manila Envelope Cuttings	2.00	@	2.10
Ex. No. 1 Manila	1.50	@	1.65
Print Manila	.90	@	1.00
Folded News (overissue)	.60	@	.70
Old Newspapers—			
No. 1	.65	@	.75
No. 2	.60	@	.65
Mixed Papers—			
No. 1	.70	@	.80
Roofing Stocks—			
(F. o. b. Chicago, net cash)			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.07	@	.40
Ledgers	.11	@	.40
Writings—			
Superfine	.13	@	.18
Extra fine	—	@	.22
Fine	.20	@	.26½
Fine, No. 2	.16	@	.25
Fine, No. 3	.12	@	.20
Book, M. F.	.06	@	.07
Book, S. S. & C.	.06	@	.07½
Book, Coated	.11	@	.16
Coated Lithograph	.09	@	.12
Label	.09	@	.12
News	.03¾	@	.04
No. 1 Jute Manila	.08½	@	.09
Manila Sul., No. 1	.04½	@	.06
Manila, No. 2	.04	@	.04½
No. 2 Kraft	.05¼	@	.05½
No. 1 Kraft	.06	@	.06¼
Common Bogus	.02¾	@	—
Straw Board	60.00	@	65.00
News Board	47.50	@	50.00
Chip Board	42.50	@	45.00
Wood Pulp Board	4.50	@	5.00
(Carload Lots)			
Binder Boards—			
No. 1, per ton	85.00	@	90.00
No. 2, per ton	70.00	@	75.00
Carload lots	60.00	@	65.00
Tarred Felts—			
Regular	66.00	@	68.00
Slaters	70.00	@	72.00
Best Tarred, 1-ply (per roll)	1.85	@	1.95
Best Tarred, 2-ply (per roll)	1.55	@	1.70
Best Tarred, 3-ply	2.10	@	2.15
No. 1 Mixed Paper	.65	@	.70

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.11½	@	.12
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07½	@	.08
Black Silesia, soft	.05	@	.05½
New Unbleached	.10½	@	.11
Washable	.04	@	.04½
Fancy	.05½	@	.06
Cottons—according to grades—			
Blue Overall	.07½	@	.08
New Blue	—	@	.04
New Black Soft	.05½	@	.06
New Light Seconds	.03	@	.03½
Khaki Cuttings	.04½	@	.05
Corduroy	.03	@	.03¾
New Canvas	.08	@	.09½
New Black Mixed	.05	@	.05½

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.75	@	2.00
Domestic	1.75	@	2.00
Manila Rope	3.50	@	4.00
Sisal Rope	1.25	@	2.00
Mixed Rope	1.10	@	1.25
Scrap Burlaps	1.50	@	1.75
Wool Tares, heavy	3.00	@	3.50
Mixed Strings	1.25	@	1.35
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	—	@	2.50

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	3.50	@	3.60
No. 2 Hard White	3.00	@	3.25
No. 1 Soft White	2.50	@	2.75
No. 2 Soft White	1.90	@	2.00
No. 1 Mixed	1.50	@	1.60
No. 2 Mixed	.90	@	1.00
Solid Ledger Stock	1.90	@	2.00
Writing Paper	1.75	@	1.85
No. 1 Books, heavy	1.30	@	1.35
No. 2 Books, light	.85	@	.90
No. 1 New Manila	2.40	@	2.50
No. 1 Old Manila	1.50	@	1.60
Print Manila	1.00	@	1.10
Container Manila	.90	@	1.00
Old Kraft	2.00	@	2.20
Common Paper	.55	@	.60
No. 1 Mixed Paper	.60	@	.75
Straw Board, Chip	.65	@	.75
Binders Board, Chip	.65	@	.75
Overissue News	.80	@	.90
Old Newspaper	.60	@	.70

Domestic Rags (Old)

White, No. 1—			
Repacked	4.50	@	5.25
Miscellaneous	3.50	@	4.00
White, No. 2—			
Repacked	.02¼	@	.02¾
Miscellaneous	.02	@	.02¼
Thirds and Blues—			
Repacked	2.50	@	2.75
Miscellaneous	1.60	@	1.75
Black Stockings	3.50	@	3.75
Roofing Stock—			
No. 1	1.75	@	1.80

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.15
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.07	@	.20
Superfines	.11	@	.31
News	.03½	@	.04
Book, Super	.06	@	.09
Book, M. F.	.05¾	@	.08½
Book, Coated	.08½	@	.20
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.05½	@	.06½
No. 2 Kraft	.04¼	@	.05
Common Bogus	.02¼	@	.02¾
Delivered New England points			
Straw Board, rolls .009	57.50		
Straw Board in Sheets, basis 35s to 70s	54.50	@	55.00
Filled News Board			47.50
Chip Board			45.00
Single Manila Pulp lined board	55.00	@	60.00
Single White, patent coated board bender	75.00	@	82.50
Wood Pulp Board	80.00	@	85.00
Binder Boards	70.00	@	75.00
(F. o. b. Mill)			
Tarred Felts—			
Regular, carload lots	65.00	@	—

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.10
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.60	@	—
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	1.95	@	2.00
No. 1 Books, Heavy	1.45	@	1.60
No. 1 Books, Light	—	@	1.15
Manila Env. Cuttings	2.00	@	2.25
No. 1 Old Manila	1.25	@	1.35
White Blank News	1.50	@	—
Old Kraft	2.10	@	—
Print Manila	.70	@	.80
No. 1 Mixed Paper	—	@	.50
Overissue News	.70	@	.80
Old Newspapers	.60	@	—
Box Board, Chip	.65	@	—

Bagging

(Price f. o. b. Boston)

Gunny No. 1—			
Foreign	1.40	@	1.50
Domestic	1.50	@	1.60
Manila Rope and Strings—			
Foreign	—	@	3.00
Domestic	—	@	3.50
Mixed Strings	.90	@	1.00
Scrap Burlaps	1.37½	@	1.50
Wool Tares, heavy	—	@	1.50
New Burlap Cutting	2.25	@	2.37½

Domestic Rags (New)

(Price f. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.11	@	.11½
Silesias, No. 1	.07	@	.07¾
New Unbleached	.09½	@	.10
Fancy	.05	@	.05¼
Washable	.04	@	.04½
Cottons—According to grades			
Blue Overalls	.07	@	.07½
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04¼	@	.05¼
Corduroy	.03	@	.03¼
New Canvas	.08	@	.08¾

Domestic Rags (Old)

(Price f. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	5.50	@	5.75
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Thirds and Blues—			
Repacked	2.00	@	2.12½
Miscellaneous	1.75	@	1.90
Roofing Stock—			
No. 1	1.70	@	—
No. 2	1.50	@	—
No. 3	1.10	@	—
No. 4	1.10	@	—

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.55	@	1.60
New No. 1 Shirt Cuttings	11.00	@	11.50
Dutch Blues	2.00	@	—
Lace Curtains	5.25	@	5.50
New Checks & Blues	4.50	@	4.65
Old Fustians	1.80	@	—

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¾	@	—
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
News f. o. b. Mills—			
Rolls (carloads)	3.25	@	—
Sheets (carloads)	3.75	@	—
Sheets (2 tons or over)	4.00	@	—
Book—			
No. 1 M. F. (carloads)	7.75	@	—
No. 2 M. F. (carloads)	7.50	@	—
No. 3 M. F. (carloads)	7.25	@	—
No. 1 S. C. (carloads)	8.25	@	—
No. 2 S. C. (carloads)	8.00	@	—
No. 3 S. C. (carloads)	7.75	@	—
No. 1 Coated and Litho	14.50	@	—
No. 2 Coated and Litho	13.50	@	—
No. 3 Coated and Litho	12.75	@	—
Coated tinted	.15	@	—
Wrapping—			
Rag Brown	4.85	@	—
White Rag	5.25	@	—
"B" Manila	5.65	@	—
No. 1 Manila	6.65	@	—
Fiber	6.65	@	—
Kraft, M. F.	7.20	@	—
M. G.	7.35	@	—

Pulp

(F. o. b. Mill)

Ground wood	25.00	@	28.00
Sulphite easy bleaching	58.00	@	61.00
Sulphite news grade	55.00	@	58.00
Sulphite, bleached	75.00	@	—
Sulphate	65.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book Shavings	3.00	@	—
White Blk. News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.25	@	—
Light and Crumpled Book Stock	1.10	@	—
Ledgers and Writings	1.50	@	—
Solid Ledgers	1.50	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.80	@	—
Strictly Folded	.47½	@	.52½
No. 1 Mixed Paper	.60	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.12	@	.12¼
Fancy Shirt Cuttings	.06	@	.06¼